

Final Status Survey Final Report Phase III

Appendix A3 Survey Unit Release Record 9527-0002, East Mountain Side

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Book 4 of 8

May 2006

CYAPCO FINAL STATUS SURVEY RELEASE RECORD EAST MOUNTAIN SIDE **SURVEY UNIT 9527-0002** Date: 3/16/06 Prepared By: melsal FSS Engineer Date: <u>3-16-01</u> <u> Och Reylad</u> FSS Engineer Reviewed By: Date: 4-11-06 Approved By: <u>Clycle T. Newso</u> Technical Support Manager **Revision** 0

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1. SURVEY UNIT DESCRIPTION

Survey Unit 9527-0002 (East Mountain Side) is designated as Final Status Survey (FSS) Class 2 and consists of approximately 9,740 m^2 (2.41 acres) of wooded area located approximately 0.13 miles from the reference coordinate system benchmark used at the Haddam Neck Plant (HNP) (see Attachment 1, Figure 1). The survey unit is bounded by a fence on the eastern and western sides, an unpaved road along the western side and a stone wall along the northern side. A Class 3 survey unit, 9527-0003, bounds this survey unit on the south. The survey unit comprises wooded terrain with some steep rock ledge and rock outcroppings within the interior.

The reference coordinates associated with this survey unit are E016 through E025 by S062 through S070 (refer to License Termination Plan Section 5.4.4). The reference coordinates provide the maximum dimensions of a rectangle containing this survey unit. Some areas contained in this rectangle may not be part of this survey unit. The boundary of the survey unit was defined using a Global Positioning System (GPS).

A review of the historical files indicates two (2) events potentially impacting this survey unit. Contamination was found in 1980 in uncontrolled areas including the East Mountain Side (refer to Plant Information Report PIR 80-37). Recently, tank farm tent material with low-level fixed contamination was found on the East Mountain Side (refer to Condition Report CR 05-0244). This material was found in another survey unit of 9527. Walkdowns of the remaining East Mountain Side did not identify more tent material. The single piece of tent material was found in Survey Unit 9527-0005 along the fence and adjacent to the western boundary of Survey Unit 9527-0002.

In Section 5.4.7.1 of the LTP, Equation 5-1 expresses the total dose contribution from three (3) components; soil contribution, existing groundwater contribution and future groundwater contribution. The survey data results for this release record address the dose contribution due to soil as provided in LTP Equation 5-1. This survey unit is considered impacted by existing groundwater radioactive contamination as the survey unit is within the capture zone perimeter for an affected monitoring well. The dose contribution from the existing groundwater contamination will be addressed later and will be included to show compliance with site unrestricted release criteria as required by the LTP. This survey unit is not considered impacted by future groundwater radioactive contamination, as there are no underground structures, systems or components containing residual radioactive material within the groundwater, the third component of Equation 5-1, is therefore zero.

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2. CLASSIFICATION BASIS

The survey unit was classified in accordance with Procedure RPM 5.1-10, "Survey Unit Classification." The historical information, scoping analyses and characterization results provided sufficient data to designate Survey Unit 9527-0002 as Class 2 in August 2005.

The "Classification Basis Summary" conducted for this survey unit consisted of:

- a) A review of the 10CFR50.75 (g) (1) database,
- b) A review of the "Initial Characterization Report" and the "Historic Site Assessment Supplement,"
- c) Historic and current survey records review,
- d) Visual inspections and a "walkdown."

A review of the 10CFR50.75 (g) (1) database report identifies six (6) documents associated with or relating to this survey area.

- a) Event PIR 80-37: Contamination was documented to be present in an area outside the restricted area. Small areas of low-level contamination were found on the facility grounds through routine survey in a normally non-radioactive area. The areas were cleaned up in 1980.
- b) Radiological Assessment Branch (RAB) memo NE-83-RA-1374 (September 1983): Results of a contamination survey outside the southeast RCA boundary has identified plant related activity in an adjacent survey area to 9527. According to the memo the source could have been the events described by PIR 80-37.
- c) Adverse Condition Report ACR 97-0994: Soil sample analysis identified plant related radioactivity on hillside east of plant (in another survey unit of 9527).
- d) Scoping Survey Report 1998: Results of scoping samples performed for decommissioning characterization data. Cesium-137 was the predominate radionuclide found in this survey unit during the scoping survey. No other plant-related radionuclides were identified in this survey unit.
- e) Event CR 05-0244: Tank farm material with low-level fixed contamination was found on the East Mountain Side in another survey unit of 9527. A single piece of tent material was found in Survey Unit 9527-0005 along the fence and adjacent to Survey Unit 9527-0002.
- f) Memo ISC 05-045: Periodic surveillance following final status survey. Surveillance is required periodically by the LTP to ensure the radiological condition does not significantly change from the FSS

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results. The memo documents no negative change in the radiological status.

A review of the "Initial and Supplemental Characterization Reports" as well as the previous "Classification Basis Summaries" provided no additional information pertinent to classification.

A survey plan was initiated and executed by Site Closure personnel in April 2005 to determine existing conditions and obtain radiological data for Final Status Survey (FSS). No areas of elevated radioactivity were identified in the survey unit.

Seventeen (17) soil samples were collected and analyzed using gamma spectroscopy. The concentrations of Cs-137 found in the soil were slightly lower than those concentrations in wooded areas determined from off-site locations as documented by Health Physics Technical Support Document (TSD) BCY-HP-0063, "Background Cs-137 Concentration in Soil." The values for Cs-137 and Co-60 are provided in Table 1.

Parameter	Cs-137 (pCi/g)	Co-60 (pCi/g)			
Minimum Value:	1.78E-01	-1.23E-02			
Maximum Value:	1.04E+00	5.39E-02			
Mean:	5.34E-01	1.64E-02			
Median:	5.52E-01	1.32E-02			
Standard Deviation:	2.42E-01	2.02E-02			

 Table 1 – Basic Statistical Quantities for Cesium-137 from the Characterization Survey

The FSS Engineer performed a visual inspection and walkdown during August 2005 to assess the physical condition of the survey unit, evaluate access points and travel paths and identify potentially hazardous conditions.

Assessment of the groundwater impact is discussed in Section 1 and Section 13. The classification basis shows that the expected residual radioactivity in the survey unit would be below the site remediation criteria and are consistent with procedural guidance, thereby sufficient to justify the final designation as Class 2.

3. DATA QUALITY OBJECTIVES (DQO)

FSS design and planning is based on the Data Quality Objective (DQO) process as described by the LTP, Procedure RPM 5.1-11, "Preparation of Final Status Survey Plan," and the "Multi-Agency Radiation Survey and Site Investigation Manual" (MARSSIM). A summary of the main features of the DQO process are provided herein.

The DQO process incorporated hypothesis testing and probabilistic sampling distributions to control decision errors during data analysis. Hypothesis testing is a process based on the scientific method that compares a baseline condition to

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an alternate condition. The baseline condition is technically known as the null hypothesis. Hypothesis testing rests on the premise that the null hypothesis is true and that sufficient evidence must be provided for rejection. In designing the survey plan, the underlying assumption, or null hypothesis was that residual activity in the survey unit exceeded the release criteria. Rejection of the null hypothesis would satisfy the release criteria objective of the FSS. Probabilistic sampling is a preferred method to select a sample so that each item in the population being studied has a known likelihood of being included in the sample. Probabilistic sampling might include simple random sampling where every sample has the same chance of being included, or systematic random sampling where samples are arranged in some order and a random starting point is selected.

The primary objective of the Final Status Survey Plan (FSSP) was to demonstrate that the level of residual radioactivity in this survey unit did not exceed the release criteria specified in the LTP and that the potential dose from residual radioactivity is As Low As Reasonably Achievable (ALARA).

A fundamental precursor to survey design is to establish a relationship between the release criteria and some measurable quantity. This is done through the development of Derived Concentration Guideline Values (DCGLs). The DCGLs represent average levels of radioactivity above background levels and are presented in terms of surface or mass activity concentrations. Chapter 6 of the LTP describes in detail the modeling used to develop the DCGLs for soil (called Base Case Soil DCGL), existing groundwater radioactivity and additional future groundwater radioactivity from building basements and footings.

A reduction to the Base Case Soil DCGLs provided in Chapter 6 of the LTP must be performed to ensure compliance with the release criteria of twenty-five millirem (25 mrem) in a year Total Effective Dose Equivalent (TEDE) when all three pathways (soil, existing groundwater and future groundwater) are potentially present. Chapter 5 of the LTP shows a compliance formula, Equation 5-1, for including the total dose from the three media. The reduced DCGL is called the Operational DCGL whose relationship to the Base Case Soil DCGL is shown by Equation 5-3 of the LTP. The Base Case Soil DCGL for Cs-137 and the DCGLs for all the other radionuclides potentially present in soil were administratively reduced by about 70% to ensure compliance with the 25 mrem in a year TEDE criterion (Table 2).

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and Required Minimum Detectable Concentrations						
Radionuclide	Base Case Soil DCGL (pCi/g) ⁽¹⁾	Operational DCGL (pCi/g) ⁽²⁾	Required MDC (pCi/g) ⁽³⁾			
H-3	4.12E+02	1.32E+02	1.65E+01			
C-14	5.66E+00	1.81E+00	2.26E-01			
Mn-54	1.74E+01	5.57E+00	6.96E-01			
Fe-55	2.74E+04	8.77E+03	1.10E+03			
Co-60	3.81E+00	1.22E+00	1.52E-01			
Ag-108m	7.14E+00	2.28E+00	2.86E-01			
Ni-63	7.23E+02	2.31E+02	2.89E+01			
Sr-90	1.55E+00	4.96E-01	6.20E-02			
Nb-94	7.12E+00	2.28E+00	2.85E-01			
Tc-99	1.26E+01	4.03E+00	5.04E-01			
Cs-134	4.67E+00	1.49E+00	1.87E-01			
Cs-137	7.91E+00	2.53E+00	3.16E-01			
Eu-152	1.01E+01	3.23E+00	4.04E-01			
Eu-154	9.29E+00	2.97E+00	3.72E-01			
Eu-155	3.92E+02	1.25E+02	1.57E+01			
Pu-238	2.96E+01	9.47E+00	1.18E+00			
Pu-239/240	2.67E+01	8.54E+00	1.07E+00			
Pu-241	8.70E+02	2.78E+02	3.48E+01			
Am-241	2.58E+01	8.26E+00	1.03E+00			
Cm-243/244	2.90E+01	9.28E+00	1.16E+00			

Table 2 – Radionuclide Specific Base Case Soil DCGL, Operational DCGLs

(1) The Base Case Soil DCGLs for soil are specified by the LTP in Chapter 6

(2) The Operational DCGL is equivalent to achieving 8 mrem per year TEDE

(3) The required MDC was 12% of the Operational DCGL

Another important facet of the DQO process is to identify the radionuclides of concern and determine the concentration variability. Seventeen (17) soils samples were collected and analyzed during characterization as discussed in Section 2. The samples were collected through biased sampling. Cesium-137 was found to be the predominate radionuclide of concern in soil. Cobalt-60 was included in the survey design based on the 1997 scoping survey results. The mean and variability of Cs-137 and Co-60 in soil in this survey unit was determined during characterization.

Instrument DQOs included a verification of the ability of the survey instrument to detect the radiation(s) of interest relative to the DCGL. Survey instrument response checks were to be performed before issue and after the instrument had been used. Control and accountability of survey instruments was to be maintained to assure the quality and prevent the loss of data.

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Laboratory DQOs and analysis results were to be reported as actual calculated results. Results reported as less than Minimum Detectable Concentration (<MDC) would not be accepted for FSS. Sample report summaries were to include unique sample identification, analytical method, radionuclide, result, and uncertainty of two standard deviations, laboratory data qualifiers, units, and the required and observed MDC.

4. SURVEY DESIGN

The level of effort associated with planning a survey is based on the complexity of the survey and nature of the hazards. To assist the FSS Engineers when preparing survey plans for FSS, guidance is provided in Procedure RPM 5.1-11, "Preparation of Final Status Survey Plans". By design, the FSSP meets the ALARA criteria for soils as specified in Chapter 4 of the LTP. The FSSP uses an integrated sample design that combines scanning surveys and sampling which can be either random or biased.

Seventeen (17) data points from characterization were used to determine concentration variability. The samples were collected through biased sampling over a simple grid design. The DQO process determined that Cs-137 and Co-60 would be the radionuclides of concern for soil in this survey unit (refer to Section 3). The sum of fractions or unity rule will be used with the individual Operational DCGLs because multiple radionuclides (Cs-137 and Co-60) are considered in the survey design. Other radionuclides identified during FSS would be evaluated to ensure adequate survey design.

Surrogate DCGLs were not required for this survey unit based low potential for HTD radionuclides and via screening under LTP Section 5.4.7.2. Radionuclide screening or de-selection is a process where an individual radionuclide or aggregate may be considered insignificant and eliminated from the FSS. The criteria for de-selection are concentrations less than 5% for individual radionuclides and less than 10% for aggregates.

The Elevated Measurement Comparison (EMC) did not apply to this survey unit since discrete, elevated areas of contamination were not expected.

The Sign Test was selected as the non-parametric statistical test. The use of the Sign Test did not require the selection or use of a background reference area, which simplified survey design and implementation. This approach was conservative since it included background Cs-137 as part of the sample set.

The number of soil samples for FSS was determined in accordance with Procedure RPM 5.1-12, "Determination of the Number of Samples for Final Status Survey." The Lower Bound of the Gray Region (LBGR) was set in accordance with Procedure RPM 5.1-11 to 0.81 to maintain the relative shift (Δ/σ) in the range of 1 and 3. A Prospective Power Curve was generated using COMPASS, a software package developed under the sponsorship of the United States Nuclear Regulatory Commission (USNRC) for implementation of the MARSSIM in support of the decommissioning license termination rule (10 CFR

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20, Subpart E). The result of the COMPASS computer run showed adequate power for the survey design. Survey design specified fifteen (15) surface soil samples for non-parametric statistical testing.

The grid pattern and locations of the soil samples were determined using Visual Sample Plan (VSP) in accordance with Procedure RPM 5.1-14, "Identifying, and Marking Surface Sample Locations for Final Status Survey." Visual Sample Plan was created by Pacific Northwest National Laboratory (PNNL) for the United States Department of Energy. A systematic triangular grid pattern with a random starting point was selected for sample design, which is appropriate for a Class 2 area.

Sample locations were identified using AutoCAD-Lt, a commercially available plotting software package with coordinates consistent with the Connecticut State Plane System. These coordinates were integrated with a GPS to locate sample locations in the field. Sample Measurement Locations for the design are listed with the GPS coordinates in Table 3.

Designation	Northing	Easting
9527-0002-001F	237214.49	668896.74
9527-0002-002F	237135.71	668851.26
9527-0002-003F	237135.71	668942.22
9527-0002-004F	237135.71	669033.18
9527-0002-005F	237056.94	668805.78
9527-0002-006F	237056.94	668896.74
9527-0002-007F	237056.94	668987.70
9527-0002-008F	236978.16	668760.30
9527-0002-009F	236978.16	668851.26
9527-0002-010F	236978.16	668942.22
9527-0002-011F	236978.16	669033.18
9527-0002-012F	236899.39	668805.78
9527-0002-013F	236899.39	668896.74
9527-0002-014F	236899.39	668987.70
9527-0002-015F	236820.61	668942.22

Table 3 -Sample Measurement Locations with Associated GPS Coordinates

There were to be two (2) judgmental samples total for soil sampling. The soil sample locations would be determined based on professional judgment and observation during characterization and walkdowns to determine areas having the potential for residual radioactivity (e.g., runoff and collection, area disturbance). The number of judgmental samples represented about 13% percent of the number of samples that would be used for non-parametric statistical testing.

Although Procedure RPM 5.1-11 only specified that 5% of the samples be selected for HTD analysis, at least three (3) soil samples or 20% of the number of samples that would be used for non-parametric statistical testing were

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randomly selected for HTD radionuclide analysis using the Microsoft Excel "RANDBETWEEN" function. Each sample would be sent off-site for a full suite analysis of the HTD radionuclides specified in the LTP, Table 2-12, "Radionuclides Potentially Present at Haddam Neck Plant."

The implementation of survey specific quality control measures as referenced by Procedure RPM 5.1-24, "Split Sample Assessment for Final Status Survey," included the collection of two (2) soil samples for "split sample" analysis by the off-site laboratory. These locations were selected randomly using the Microsoft Excel "RANDBETWEEN" function. The number of quality control soil samples was determined to be 13% of fifteen (15) samples, rounded up to the next whole number.

The LTP specifies that scanning will be performed in a combination of systematic and judgmental measurements for a Class 2 land area and cover 10% to 100% of the area. The fraction of scanning coverage was determined during the DQO process with the total amount and location(s) based on the likelihood of finding elevated activity during FSS. Approximately 25% of the survey unit was to be scanned based on the characterization survey and sampling results.

For this Class 2 survey unit, the "Investigation Level" for area scanning and soil sample measurement results are those levels specified in LTP, Table 5-8, "Investigation Levels." Table 4 provides a synopsis of the survey design.

Feature	Design Criteria	Basis
Survey Unit Land Area	9740 m ²	GPS measurements of area
Number of Measurements	15	Type 1 and Type 2 errors were 0.05, sigma was 0.10, the LBGR was adjusted to 0.81 to maintain Relative Shift in the range of 1 and 3, Relative Shift was 2
Grid Spacing	27.38	Based on triangular grid
Interval Spacing	23.71	Based on triangular grid
Operational DCGL	2.53 pCi/g Cs-137 1.22 pCi/g Co-60	Administratively set to achieve 8 mrem in a year TEDE
Scan Survey Area Coverage	25% of the area	The LTP requires >10% area coverage for Class 2 Survey Units.
Scan Investigation Level	Detectable over background	Based on achieving the Operational DCGL

Table 4 – Synopsis of the Survey Design

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5. SURVEY IMPLEMENTATION

Final status survey field activities were conducted under Work Plan and Inspection Record (WP&IR) 2005-0054. The WP&IR package included a detailed FSSP, job safety analysis, job planning checklist and related procedures for reference. Daily briefings were conducted to discuss the expectations for job performance and the safety aspects of the survey. The "Daily Survey Journal" was used to document field activities and other information pertaining to the FSS.

Survey activities occurred August 23, 2005 through September 22, 2005.

The scan areas were marked out and scanned for elevated readings (see Attachment 2 for Scan Area Results). Scanning was performed with an Eberline E-600 using a SPA-3 sodium iodide detector. The E-600 was operated in the rate-meter mode and used with audio response. The probe was positioned as close to the ground as possible and was moved at a scan speed of about 0.5 meters per second.

Using GPS coordinates, sample measurement locations were identified and marked with a surveyor's flag for identification. At each sample measurement location, a one (1) meter radius around the sample flag was scanned for elevated radiation levels.

Fifteen (15) surface soil samples were collected and packaged in accordance with Haddam Neck Plant (HNP) Procedure RPM 5.1-3, "Collection of Sample Media for Final Status Survey" and FSS design. Samples were controlled, transported, stored, and transferred to the off-site laboratory using Chain-of-Custody (COC) protocol in accordance with Procedure RPM 5.1-5, "Chain of Custody for Final Status Survey Samples."

Three (3) soil samples (9527-0002-004F, 9527-0002-009F and 9527-0002-012F) were randomly selected for HTD radionuclide analysis by the off-site laboratory.

Two (2) biased soil samples (9527-0002-016F and 9527-0002-017F) were collected and analyzed by the offsite laboratory for gamma spectroscopy.

The implementation of survey specific quality control measures included the collection of two (2) samples (9527-0002-001F and 9527-0002-011F for "split sample" analysis by the off-site laboratory.

6. SURVEY RESULTS

The seventeen (17) soil sample measurement locations identified in the FSS plan were scanned about a one (1) meter radius for elevated radiation levels. Table 5 provides an overview of the scan area survey. Scan area results are provided in Attachment 2.

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Sample Measurement Location	Highest Logged Reading (kcpm)	Action Level (kcpm)	Above Action Level ⁽¹⁾
1	10.7	12.3	No
2	10.6	11.4	No
3	11.3	12.9	No
4	13.1	15.7	No
5	10.2	10.8	No
6	9.80	11.4	No
7	14.4	15.7	No
8	12.8	14.1	No
9	12.4	15.8	No
10	18.6	20.2	No
11	16.7	19.6	No
12	17.1	20.2	No
13	17.7	20.9	No
14	17.6	19.6	No
15	23.3	26.0	No
16	15.7	19.5	No
17	11.4	12.9	No

Table 5- Scan Area Results for Sample Measurement Locations

(1) FSS sample plans require movement of the sample measurement location to the area within the 1 meter radius yielding the response above the action level

Thirty areas were scanned for elevated radiation levels. Several elevated areas were identified. Table 6 provides an overview of the scan area survey. Scan area results are provided in Attachment 2.

ADIC U- SCAN ATCA RESULTS							
Scan Area	Highest Logged Reading (kcpm)	Action Level (kcpm)	Elevated Reading Identification ⁽¹⁾	Investigation Sample			
1	23.5	28.1	None – no elevated areas identified	None			
2	209	13.9	9527-02-ER-01-17-1	9527-0002-018F			
3	18.0	21.4	None – no elevated areas identified	None			
4	4 13.6 15.3		None – no elevated areas identified	None			
5	12.9	14.8	None – no elevated areas identified	None			

Table 6- Scan Area Results

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Table 6- Scan Area Results							
Scan Area	Highest Logged Reading (kcpm)	Action Level (kcpm)	Elevated Reading Identification ⁽¹⁾	Investigation Sample			
6	13.1	13.5	None – no elevated areas identified	None			
7	14.3	15.5	None – no elevated areas identified	None			
8	18.9	17.4	9527-02-SC-02-31-0	None ⁽²⁾			
9	20.6	21.7	None – no elevated areas identified	None			
10	19.1	20.0	None – no elevated areas identified	None			
11	15.6	15.3	9527-02-SC-02-62-0	None ⁽²⁾			
12	16.4	17.2	None – no elevated areas identified	None			
13	17.1	18.2	None – no elevated areas identified	None			
14	15.7	17.3	None – no elevated areas identified	None			
15	15.8	17.8	None – no elevated areas identified	None			
16	13.5	13.6	None – no elevated areas identified	None			
17	12.3	13.9	None no elevated areas identified	None			
18	12.2	12.8	None – no elevated areas identified	None			
19	11.4	14.1	None – no elevated areas identified	None			
20	10.9	12.6	None – no elevated areas identified	None			
21	11.2	11.4	None – no elevated areas identified	None			
22	9.65	11.6	None – no elevated areas identified	None			
23	9.82	11.4	None – no elevated areas identified	None			
24	9.44	10.9	None – no elevated areas identified	None			
25	10.7	11.5	 None – no elevated areas identified 	None			
26	7.81	9.05	None – no elevated areas identified	None			

1 adie 6- Scan Area Results							
Scan Area	Highest Logged Reading (kcpm)	Action Level (kcpm)	Elevated Reading Identification ⁽¹⁾	Investigation Sample			
27	12.5	13.5	None – no elevated areas identified	None			
28	15.0	16.0	None – no elevated areas identified	None			
29	18.5	23.4	None – no elevated areas identified	None			
30	16.0	16.8	None – no elevated areas identified	None			

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(1) ER and SC are nomenclature associated with the barcodes used in the field where ER

refers to Elevated Readings and SC refers to Scan

(2) Refer to Section 8 for additional details

The off-site laboratory employed for the radiological analyses of samples was General Engineering Laboratories (GEL) – Charleston, South Carolina. The laboratory analyzed the fifteen (15) samples taken for non-parametric statistical testing and the associated duplicates using gamma spectroscopy. Gamma spectroscopy analysis was performed to the required MDC. Gamma spectroscopy results identified some radionuclides meeting the accepted criteria for detection (i.e., a result greater than two standard deviations uncertainty). All could be de-selected or excluded using the 5% and 10% rule described in Section 4.

Cesium-137 was identified in all fifteen (15) samples. The mean of the results of gamma spectrometry analysis for each of the samples indicated Cs-137 at levels consistent with the concentrations of Cs-137 found in soil at off-site locations within the vicinity of the HNP as presented in the Health Physics TSD BCY-HP-0063.

None of the samples exceeded the Operational DCGL. Gamma spectroscopy sample analysis did not require further investigation; however, investigation was required with the inclusion of those HTD radionuclides that exceeded the de-selection criteria of 5% and 10% (refer to Table 7 and Section 8). A summary of the sample results is provided in Table 7.

Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ⁽¹⁾⁽²⁾
9527-0002-001F	1.38E+00	2.06E-02	0.562
9527-0002-002F	8.73E-01	7.08E-03	0.351
9527-0002-003F	9.60E-01	0.00E+00	0.379
9527-0002-004F	2.41E+00	3.94E-02	0.985
9527-0002-005F	5.88E-01	-1.93E-02	0.217

Table 7- Summary of Soil Sample Results

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Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ^{(1) (2)}
9527-0002-006F	7.61E-01	1.07E-02	0.310
9527-0002-007F	1.38E+00	0.00E+00	0.545
9527-0002-008F	5.16E-01	-5.22E-03	0.200
9527-0002-009F	4.77E-01	-7.01E-03	0.183
9527-0002-010F	1.33E+00	1.50E-02	0.538
9527-0002-011F	7.17E-01	2.99E-02	0.308
9527-0002-012F	6.46E-01	1.85E-02	0.270
9527-0002-013F	5.52E-01	4.96E-02	0.259
9527-0002-014F	5.68E-01	2.62E-02	0.246
9527-0002-015F	1.10E-01	2.21E-02	0.062

Table 7- Summary of Soil Sample Results

(1) The Operational DCGLs are 2.53 pCi/g for Cs-137 and 1.22 pCi/g for Co-60 used in conjunction with the unity rule

(2) The total fraction of the Operational DCGL for 9527-0002-004F is 1.326 when the HTD results are combined with the gamma spectroscopy results; therefore, an investigation was necessary (refer to Table 8 and Section 8)

The off-site laboratory also processed three (3) samples for HTD analysis as required by the sample plan. The requested analyses included alpha spectroscopy, gas proportional counting, and liquid scintillation depending on the radionuclide and the measurement method. All analyses met the required MDC. Four (4) of the HTD radionuclides met the accepted criteria for detection (i.e., a result greater than two standard deviations uncertainty) in more than one sample. Table 8 lists the results for the HTD radionuclides that could not be deselected based on the 5% and 10% rules.

Sample	Sr-90 pCl/g	H-3 pCl/g	C-14 pCi/g	Tc-99 pCi/g	Fraction of the Operational DCGL ^{(1) (2)}
9527-0002-004F	3.64E-02	1.72E+00	2.96E-01	3.68E-01	0.341
9527-0002-009F	1.67E-02	1.94E+00	2.87E-01	3.25E-01	0.288
9527-0002-012F	1.07E-02	3.48E+00	2.30E-01	3.76E-01	0.268

Table 8-Hard-to-Detect Sample Results

(1) The Operational DCGLs are 0.496 pCi/g for Sr-90, 132 pCi/g for H-3, 1.81 pCi/g for C-14 and 4.03 pCi/g for Tc-99 used in conjunction with the unity rule

(2) The total fraction of the Operational DCGL for 9527-0002-004F is 1.33 when the HTD results are combined with the gamma spectroscopy results; therefore, an investigation was necessary (refer to Section 8)

Two (2) biased samples were collected at locations selected by FSS Supervision based on professional judgment and observation. Gamma spectroscopy analysis was performed by the off-site laboratory to the required MDC. None of the samples exceeded 70% of the Operational DCGL. No further action or investigations were required (see Table 9).

RELEASE RECORD

Table 9 – Diased Sample Results									
Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ⁽¹⁾						
9527-0002-016F	7.64E-01	1.77E-02	0.316						
9527-0002-017F	1.44E+00	1.48E-01	0.690						

Table 9 – Biased Sample Results

(1) The Operational DCGLs are 2.53 pCi/g for Cs-137 and 1.22 pCi/g for Co-60 used in conjunction with the unity rule

7. QUALITY CONTROL

The off-site laboratory processed the split samples and performed gamma spectroscopy analysis. Thirteen percent (13%) of the samples were selected for analysis, which exceeds the 5% minimum required by the LTP. The data were evaluated using USNRC acceptance criteria specified in Inspection Procedure 84750 as detailed in HNP Procedure RPM 5.1-24, "Split Sample Assessment for Final Status Survey." There was acceptable agreement between the field split results for sample 9527-0002-011F. There was unacceptable agreement between the field split results for Cs-137 in sample 9527-0002-001F which was identified under Condition Report (CR) 05-0781. Evaluation of the data for location 1 using the reported results for NORM resulted in acceptable The source of the disagreement for Cs-137 is likely a agreement. disproportionate amount of organic material in the field splits. A review of the Daily Survey Journals (field notes) and interviews with FSS Supervision indicate this to be the apparent cause. Field Supervision recalls that the rocky terrain and undergrowth made sample collection difficult.

The sample analysis vendor, General Engineering Laboratories (GEL) – Charleston, South Carolina, maintained quality control and quality assurance plans as part of normal operation. Refer to Attachment 2 for data and data quality analysis results.

8. INVESTIGATIONS AND RESULTS

A sample was collected August 24, 2005 at a location exhibiting elevated readings during scanning (9527-0002-018F). The Daily Survey Journal describes the source as "no larger than a [sic] probe area", indicating that a small, discrete source of activity was present. Post sample collection scanning confirmed no that no elevated activity remained. The FSS Engineer at the time had the sample processed to include removal of the discrete entity, according to interviews with FSS Supervision and Health Physics Technicians present at the time. The remaining soil, following removal of the source of activity, was stored at the Emergency Operations Facility in a storage area. The final disposition of the discrete source is unknown. Gamma spectroscopy analysis was performed on the remaining soil on March 9, 2006 by the on-site laboratory to the required MDC. The samples results did not exceed 30% of the Operational DCGL. No further action or investigations were required (see Table 10).

RELEASE RECORD

A sample was collected August 25, 2005 at a location exhibiting elevated readings during scanning (9527-0002-019F). Gamma spectroscopy analysis was performed by the off-site laboratory to the required MDC. The sample results did not exceed 40% of the Operational DCGL. No further action or investigations were required (see Table 10).

Additional scanning was performed in two (2) small locations in March 2006 to obtain additional data relevant to the DQOs. The scanning was performed in two (2) strips approximately three (3) feet wide by thirty (30) feet long in scan area 3 and scan area 5. No elevated readings were identified.

Confirmatory sampling was performed in March 2006 at sample location #4 when the Operational DCGL was found to have been exceeded. Two (2) samples were collected, were dried, and were analyzed by gamma spectroscopy to the required MDCs by the on-site laboratory (9527-0002-020F and 9527-0002-021F). The sample results did not exceed 33% of the Operational DCGL. No further action or investigations were required (see Table 10).

Sample Number	Cs-137 pCi/g	Co-60 pCi/g	Fraction of the Operational DCGL ⁽¹⁾ 0.316		
9527-0002-018F	1.18E-01	3.29E-01			
9527-0002-019F	9.22E-01	3.76E-02	0.395		
9527-0002-020F	6.88E-01	3.05E-02	0.297		
9527-0002-021F	7.61E-01	3.10E-02	0.326		

Table 9 – Confirmatory Sample Results

(1) The Operational DCGLs are 2.53 pCi/g for Cs-137 and 1.22 pCi/g for Co-60 used in conjunction with the unity rule

9. **REMEDIATION AND RESULTS**

Historically, no radiological remedial action as described by MARSSIM Section 5.4 was performed in this survey unit prior to or as a result of the FSS. Health Physics TSD BCY-HP-0078, "ALARA Evaluation of Soil Remediation in Support of Final Status Survey," determined that remediation beyond that required to meet the release criteria to be unnecessary and that the remaining residual radioactivity in soil was ALARA.

10. CHANGES FROM THE FINAL STATUS SURVEY PLAN

Four (4) HTD radionuclides were reported in concentrations exceeding the 5% and 10% rule for de-selection. Therefore, the individual Operational DCGLs for Sr-90, H-3, C-14 and Tc-99 were included into sample design in conjunction with the unity rule to ensure adequate survey design in accordance with the DQOs. The result of the COMPASS computer run showed adequate power and maintained the original fifteen (15) surface soil samples for non-parametric statistical testing.

RELEASE RECORD

It was noted that all samples, including biased and investigatory, sent to the offsite laboratory were analyzed for H-3 and Sr-90. The analyses were not identified as being necessary for all samples by the DQOs, nor were they specified in the instructions of the FSS plan for completing the COC for the laboratory. The reason could have been a decision made by the FSS Engineer at the time (which is more conservative) who then forgot to pen and ink the FSS plan and record the basis in the FSS plan or in a Daily Survey Journal

11. DATA QUALITY ASSESSMENT (DQA)

The DQO sample design and data were reviewed in accordance with Procedure RPM 5.1-23, "Data Quality Assessment," for completeness and consistency. The sampling design had adequate power as indicated by the Retrospective Power Curve. The Sign Test was performed on the data and compared to the original assumptions of the DQOs. The Sign Test shows that the survey unit passes FSS.

Documentation was complete and legible. Surveys and sample collection were consistent with the DQOs and were sufficient to ensure that the survey unit was properly designated as Class 2.

The preliminary data review consisted of calculating basic statistical quantities (e.g., mean, median, standard deviation).

The sample standard deviation was slightly more than the value used for the survey design. This is represented by the shift in the retrospective power curve as shown in Attachment 2g. This would indicate a change to the original LBGR to maintain the number of samples at fifteen to meet the Operational DCGL. However, the value of LBGR is less of a critical issue as the survey unit has passed the statistical test, and the mean and median values are well below the Operational DCGL when used in conjunction with the unity rule. Also, the retrospective power curve shows that a sufficient number of samples were collected to achieve the desired power. Therefore, the survey unit meets the release criteria with adequate power as required by the DQOs.

The range of the data, about 4.1 standard deviations, was not unusually large. The difference between the mean and median was 30% of the standard deviation which indicates positive skewness in the data. The data was represented graphically through posting plots, a frequency plot, and a quantile plot. The frequency plot shows some positive skewness as confirmed by the calculated skew of 0.4 and is probably due to the differences in terrain and the collection of runoff.

All data, assessments, and graphical representations are provided in Attachment 2.

12. ANOMALIES

No anomalies were noted.

RELEASE RECORD

13. CONCLUSION

Survey Unit 9527-0002 has met the final DQOs of the FSS. The ALARA criteria for soils as specified in Chapter 4 of the LTP were achieved. Elevated Measurement Comparison and remediation was not required.

The sample data passed the Sign Test. The null hypothesis was rejected. Graphical representation of data indicates some positive skewness that is probably due to the differences in terrain and the collection of runoff. The Retrospective Power Curve generated using COMPASS shows adequate power was achieved. The survey unit was properly designated as Class 2.

As discussed in Section 1, the survey data results for this release record address the dose contribution due to soil as provided in LTP Equation 5-1. This survey unit is considered impacted by existing groundwater radioactive contamination as the survey unit is within the capture zone perimeter for an affected monitoring well. The dose contribution from the existing groundwater contamination will be addressed later and will be included to show compliance with site unrestricted release criteria as required by the LTP. This survey unit is not considered impacted by future groundwater radioactive contamination, as there are no underground structures, systems or components containing residual radioactive material within the groundwater, the third component of Equation 5-1, is therefore zero.

14. ATTACHMENTS

14.1 Attachment 1 – Figures

14.2 Attachment 2 – Sample and Statistical Data

RELEASE RECORD

Attachment 1 Figures (5 pages)











RELEASE RECORD

Attachment 2 Sample and Statistical Data

RELEASE RECORD

Attachment 2a Sample Data (100 Pages)

CASE NARRATIVE For CONNECTICUT YANKEE RE: Soils PO# 002332 Work Order: 144481 SDG: MSR #05-2161

September 26, 2005

Laboratory Identification: General Engineering Laboratories, LLC

Mailing Address:

P.O. Box 30712 Charleston, South Carolina 29417

Express Mail Delivery and Shipping Address:

2040 Savage Road Charleston, South Carolina 29407

<u>Telephone Number:</u> (843) 556-8171

Summary:

Sample receipt

The samples for the Soil Project for work order 144481 arrived at General Engineering Laboratories, LLC, (GEL) in Charleston, South Carolina September 01, 2005 for environmental analysis. All sample containers arrived without any visible signs of tampering or breakage. The chain of custody contained the proper documentation and signatures.

The laboratory received the following samples:

Sample ID	Client Sample ID
144481001	9527-0002-001F
144481002	9527-0002-001FS
144481003	9527-0002-002F
144481004	9527-0002-003F
144481005	9527-0002-005F
144481006	9527-0002-006F
144481007	9527-0002-007F
144481008	9527-0002-008F

GENERAL ENGINEERING LABORATORIES, LLC a Member of THE GEL GROUP, INC. P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407) Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

Page 2 of 81

Sample ID	Client Sample ID
144481009	9527-0002-010F
144481010	9527-0002-011F
144481011	9527-0002-011FS
144481012	9527-0002-013F
144481013	9527-0002-014F
144481014	9527-0002-015F
144481015	9527-0002-016F
144481016	9527-0002-017F
144481017	9527-0002-019F
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F

Items of Note:

No items to note.

Case Narrative:

Sample analyses were conducted using methodology as outlined in General Engineering Laboratories (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are listed below by analytical parameter.

Analytical Request:

Seventeen soil samples were analyzed for FSSGAM, Sr-90 and Tritium. Three samples were analyzed for FSSALL

Internal Chain of Custody:

Custody was maintained for all the samples.

Data Package:

The enclosed data package contains the following sections: Case Narrative, Chain of Custody and Supporting Documentation and all analytical fractions.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Clyp

Cheryl Jones Project Manager

GENERAL ENGINEERING LABORATORIES, LLC a Member of THE GEL GROUP, INC. P.O. Box 30712 • Charleston, SC 29417 • 2040 Savage Road (29407) Phone (843) 556-8171 • Fax (843) 766-1178 • www.gel.com

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Chain of Custody and Supporting Documentation

Page 5	Connecticut Y 362 Injun H	ankee At Iollow Rosd, H 860-267	omic Po Last Hampton, 1-2556	wer C , CT 0642	ompan 4	y			Ch	ain o	f Custo	dy Form	No. 2005-00381
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81	Contact Name & Phone: P. Hollenbeck 860-267-2556	5 Ext. 3923		Media Code	Sample Type	Container Size- &Type Code						Comments:	
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	9527-0002-002F	8/23/05	0850	TS	G	BP	X	X	X				
	9527-0002-003F	8/23/05	0900	TS	G	BP	X	X	X				
- [7	9527-0002-004F ·	8/23/05	0910	TS	G	BP				X			
	9527-0002-005F 4	8/23/05	1115	TS	G	BP	X	X	X				
	9527-0002-006F /	8/23/05	1350	TS	G	BP	X	Х	X				
	9527-0002-007F 🖌	8/23/05	0920	TS	G	BP	X	X	x				
- []	9527-0002-008F	8/23/05	1315	TS	G	BP	X	X	X				1
- []	9527-0002-009F	8/23/05	1340	TS	G	BP				X			
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9527-0002-012F •	8/23/05	1432	TS	G	BP				X																								
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9527-0002-014F •	8/23/05	1045	TS	G	BP	X	X	X																									
9527-0002-015F	8/23/05	1056	TS	G	BP	X	X	X																									
9527-0002-016F *	8/23/05	1034	TS .	G	BP	X	X	X																									
9527-0002-017F	8/23/05	1320	TS	G	BP	X	X	X																									
9527-0002-019F •	8/25/05	1500	TS	G	BP	x	x	X																									
NOTES: PO #: 002332 Sr-90 RDL = 0.025 pCi/g	MSR #:	🛛 LTP QA 🔲 Radwaste QA 🗌 Non QA					Samples Shipped Via: Fed Ex UPS Hand	Internal Container Temp.: <u>15</u> Deg. C Custody Sealed? Y I N []																									
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hipping Container ID: 7906 2960 4060 Chain of C	Custody # 2005-00381, 2015-038
Custody Seals on shipping container intact?	Yes [7 No []
. Custody Seals dated and signed?	Yes [] No []
. Chain-of-Custody record present?	Yes [] No []
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0. Were any anomalies identified in sample receipt?	Yes [] No [4
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Page 7 of 81

SAMPLE RECEIPT & REVIEW FORM

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	Clientel 12 1010 + 1 (11+) to be a STG/ARCOC/Work Order: 121/1481											
Cli	ent: On NCTIGUI Tan	hu	¢		SUG/ARCUC/Wark Order: 19498/							
Da	te Received: 0.1.05				PM(A) Review (ensure non-conforming items are resolved prior to signing):							
Re	ceived By: 47m				agap							
	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)							
1	Shipping containers received intact and sealed?				Circle Applicable: seals broken damaged container leaking container other (describe)							
2	Samples requiring cold preservation within (4 +/- 2 C)?				Circle Coolant # ice bags blue ice dry ice some other describe)							
3	Chain of custody documents included with shipment?											
4	Sample containers intact and sealed?				Circle Applicable: seals broken damaged container leaking container other (describe)							
5	Samples requiring chemical preservation at proper pH?				Sample ID's, containers affected							
6	VOA vials free of headspace (defined as < 6mm bubble)?											
7	Are Encore containers present? (If yes, immediately deliver to VOA laboratory)											
8	Samples received within holding time?				Id's and tests affected:							
9	Sample ID's on COC match ID's on bottles?				Sample ID's and containers affected:							
10	Date & time on COC match date & time on bottles?				Sample ID's affected: Sample ID's affected:							
	Number of containers received match number indicated on COC?				• • • •							
12	COC torm is properly signed in relinquished/received sections?											
14	Air Bill , Tracking #'s, & Additional Comments											
	Suspected Hazard Information	Non- Regulated	Regulated	High Level	RSO RAD Receipt #							
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B	PUB Regulated?	~			Comments:							
c	Material? If yes, contact Waste Manager or ESH Manager.		r		Hazard Class Shipped: UN#:							
for PMA) review of Hazard classification: Initials Date: 9/1/05												


Radiochemistry Case Narrative Connecticut Yankee Atomic Power Co (YANK) Work Order 144481

Method/Analysis Information

Product:Alphaspec Am241, Cm, Solid ALL FSSAnalytical Method:DOE EML HASL-300, Am-05-RC ModifiedPrep Method:Ash Soil PrepDry Soil Prep GL-RAD-A-021 Method:Dry Soil PrepAnalytical Batch Number:464478Prep Batch Number:459654Dry Soil Prep GL-RAD-A-021 Batch Number:459653

 Sample ID
 Client ID

 144481018
 9527-0002-004F

 144481019
 9527-0002-009F

 144481020
 9527-0002-012F

 1200940285
 Method Blank (MB)

 1200940286
 144481018(9527-0002-004F) Sample Duplicate (DUP)

 1200940287
 144481018(9527-0002-004F) Matrix Spike (MS)

 1200940288
 Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481018 (9527-0002-004F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Manual Integration No manual integrations were performed on data in this batch.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information	
Product:	Alphaspec Pu, Solid-ALL FSS
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Ash Soil Prep
Dry Soil Prep GL-RAD-A-021 Method:	Dry Soil Prep
Analytical Batch Number:	464479
Prep Batch Number:	459654
Dry Soil Prep GL-RAD-A-021 Batch Numbe	r: 459653

Sample ID	Client ID
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200940289	Method Blank (MB)
1200940290	144481018(9527-0002-004F) Sample Duplicate (DUP)
1200940291	144481018(9527-0002-004F) Matrix Spike (MS)
1200940292	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 14.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC The following sample was used for QC: 144481018 (9527-0002-004F).

QC Information

₽.

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

Samples 1200940289 (MB) and 144481020 (9527-0002-012F) were recounted due to a negative result greater than three times the error.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Manual Integration

No manual integrations were performed on data in this batch.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:Liquid Scint Pu241, Solid-ALL FSSAnalytical Method:DOE EML HASL-300, Pu-11-RC ModifiedPrep Method:Ash Soil PrepDry Soil Prep GL-RAD-A-021 Method:Dry Soil PrepAnalytical Batch Number:464480Prep Batch Number:459654Dry Soil Prep GL-RAD-A-021 Batch Number:459653

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 459654

 JL-RAD-A-021 Batch Number:
 459653

 Sample ID
 Client ID

 144481018
 9527-0002-004F

 144481019
 9527-0002-009F

 144481020
 9527-0002-012F

 1200940293
 Method Blank (MB)

 1200940294
 144481018(9527-0002-004F) Sample Duplicate (DUP)

 1200940295
 144481018(9527-0002-004F) Matrix Spike (MS)

 1200940296
 Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-035 REV# 7.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (OC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481018 (9527-0002-004F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Manual Integration

No manual integrations were performed on data in this batch.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:Gamma,Solid-FSS GAM & ALL FSSAnalytical Method:EML HASL 300, 4.5.2.3Prep Method:Dry Soil PrepAnalytical Batch Number:459542Prep Batch Number:459653

Sample ID	Client ID
144481001	9527-0002-001F
144481002	9527-0002-001FS
144481003	9527-0002-002F

144481004	9527-0002-003F
144481005	9527-0002-005F
144481006	9527-0002-006F
144481007	9527-0002-007F
144481008	9527-0002-008F
144481009	9527-0002-010F
144481010	9527-0002-011F
144481011	9527-0002-011FS
144481012	9527-0002-013F
144481013	9527-0002-014F
144481014	9527-0002-015F
144481015	9527-0002-016F
144481016	9527-0002-017F
144481017	9527-0002-019F
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200928335	Method Blank (MB)
1200928336	144481001(9527-0002-001F) Sample Duplicate (DUP)
1200928337	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 10.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC The following sample was used for QC: 144481001 (9527-0002-001F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

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Sample Re-prep/Re-analysis

Sample was recounted due to analyst error. 1200928337 (LCS). Sample 1200928336 (9527-0002-001F) was recounted due to high relative percent difference/relative error ratio.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Additional Comments

Precision for Pb-212 was not demonstrated using the relative percent difference, instead the relative error ratio was used (2.44879). 1200928336 (9527-0002-001F) and 144481001 (9527-0002-001F).

Qualifier	Reason	Analyte	Sample
U	Result not detected above the detection limit	Bismuth-212	144481012
וט 🗌	Data rejected due to interference.	Cesium-134	144481007
		Europium-155	144481005
			144481006
			144481007
			144481016
		Manganese-54	144481017
UI	Data rejected due to low abundance.	Actinium-228	144481009
			144481012
			144481020
		Bismuth-212	144481003
		Cesium-134	1200928336
			144481009
			144481010
			144481011
			144481016
			144481017
		Cobalt-60	144481007
UI	Data rejected due to low abundance	Cesium-134	144481004
UI	Data rejected due to no valid peak.	Bismuth-212	144481012
		Cobalt-60	144481004

Qualifier Information

Method/Analysis Information

Product:GFPC, Sr90, solid - 0.025 pCl/gAnalytical Method:EPA 905.0 ModifiedPrep Method:Ash Soil PrepDry Soil Prep GL-RAD-A-021 Method:Dry Soil PrepAnalytical Batch Number:464187Prep Batch Number:459654Dry Soil Prep GL-RAD-A-021 Batch Number:459653

Sample ID	Client ID
144481001	9527-0002-001F
144481002	9527-0002-001FS
144481003	9527-0002-002F
144481004	9527-0002-003F
144481005	9527-0002-005F

144481006	9527-0002-006F
144481007	9527-0002-007F
144481008	9527-0002-008F
144481009	9527-0002-010F
144481010	9527-0002-011F
144481011	9527-0002-011FS
144481012	9527-0002-013F
144481013	9527-0002-014F
144481014	9527-0002-015F
144481015	9527-0002-016F
144481016	9527-0002-017F
144481017	9527-0002-019F
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200939586	Method Blank (MB)
1200939587	144481001(9527-0002-001F) Sample Duplicate (DUP)
1200939588	144481001(9527-0002-001F) Matrix Spike (MS)
1200939589	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 9.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (OC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481001 (9527-0002-001F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries

All chemical recoveries meet the required acceptance limits for this sample set.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:Liquid Scint Tc99, Solid-ALL FSSAnalytical Method:DOE EML HASL-300, Tc-02-RC ModifiedAnalytical Batch Number:461642

Sample ID	Client ID
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200933265	Method Blank (MB)
1200933266	144635004(NOL-01-01-014-F) Sample Duplicate (DUP)
1200933267	144635004(NOL-01-01-014-F) Matrix Spike (MS)
1200933268	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-005 REV# 12.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144635004 (NOL-01-01-014-F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Oualifier information Manual qualifiers were not requi

Manual qualifiers were not required.

Method/Analysis Information

Product:Liquid Scint Fe55, Solid-ALL FSSAnalytical Method:DOE RESL Fe-1, ModifiedPrep Method:Ash Soil PrepDry Soil Prep GL-RAD-A-021 Method:Dry Soil PrepAnalytical Batch Number:462172Prep Batch Number:459654Dry Soil Prep GL-RAD-A-021 Batch Number:459653

Sample ID	Client ID
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200934797	Method Blank (MB)
1200934798	144481018(9527-0002-004F) Sample Duplicate (DUP)
1200934799	144481018(9527-0002-004F) Matrix Spike (MS)
1200934800	Laboratory Control Sample (LCS)
	• • • •

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-040 REV# 3.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

<u>Quality Control (OC) Information:</u>

Blank Information The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481018 (9527-0002-004F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Oualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:Liquid Scint Ni63, Solid-ALL FSSAnalytical Method:DOE RESL Ni-1, ModifiedPrep Method:Ash Soil PrepDry Soil Prep GL-RAD-A-021 Method:Dry Soil PrepAnalytical Batch Number:462173Prep Batch Number:459654Dry Soil Prep GL-RAD-A-021 Batch Number:459653

 Sample ID
 Client ID

 144481018
 9527-0002-004F

 144481019
 9527-0002-009F

 144481020
 9527-0002-012F

 1200934801
 Method Blank (MB)

 1200934802
 144481018(9527-0002-004F) Sample Duplicate (DUP)

 1200934803
 144481018(9527-0002-004F) Matrix Spike (MS)

 1200934804
 Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-022 REV# 7.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481018 (9527-0002-004F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:LSC, Tritium Dist, Solid-HTD2,ALL FSSAnalytical Method:EPA 906.0 ModifiedAnalytical Batch Number:461685

 Sample ID
 Client ID

 144481001
 9527-0002-001F

 144481002
 9527-0002-001FS

 144481007
 9527-0002-007F

 144481008
 9527-0002-008F

 144481009
 9527-0002-010F

 1200933385
 Method Blank (MB)

 1200933386
 144481009(9527-0002-010F) Sample Duplicate (DUP)

1200933387 144481009(9527-0002-010F) Matrix Spike (MS) 1200933388 Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 10.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information The blank volume is representative of the sample volume in this batch.

Designated QC The following sample was used for QC: 144481009 (9527-0002-010F).

QC Information All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

None of the samples in this sample set required reprep or reanalysis.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Qualifier information Manual qualifiers were not required.

Method/Analysis InformationProduct:LSC, Tritium Dist, Solid-HTD2,ALL FSSAnalytical Method:EPA 906.0 ModifiedAnalytical Batch Number:464550

Sample ID	Client ID
144481003	9527-0002-002F
144481004	9527-0002-003F
144481005	9527-0002-005F
144481006	9527-0002-006F
1200940469	Method Blank (MB)
1200940470	144481003(9527-0002-002F) Sample Duplicate (DUP)
1200940471	144481003(9527-0002-002F) Matrix Spike (MS)
1200940472	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 10.

Calibration Information:

Calibration Information All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481003 (9527-0002-002F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

Samples 144481003 (9527-0002-002F), 144481004 (9527-0002-003F), 144481005 (9527-0002-005F) and 144481006 (9527-0002-006F) were repreped due to spectral interference.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:LSC, Tritium Dist, Solid-HTD2,ALL FSSAnalytical Method:EPA 906.0 ModifiedAnalytical Batch Number:468049

Sample ID	Client ID
144481010	9527-0002-011F
144481011	9527-0002-011FS
144481012	9527-0002-013F
144481013	9527-0002-014F
144481014	9527-0002-015F
144481015	9527-0002-016F
144481016	9527-0002-017F
144481017	9527-0002-019F
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200948828	Method Blank (MB)
1200948829	144481016(9527-0002-017F) Sample Duplicate (DUP)
1200948830	144481016(9527-0002-017F) Matrix Spike (MS)
1200948831	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 10.

Calibration Information:

Calibration Information All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Ouality Control (OC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481016 (9527-0002-017F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

Sample 1200948830 (9527-0002-017F) was recounted due to low/high recovery. Samples were reprepped due to low/high recovery.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. An NCR was not generated for this SDG.

Qualifier information

Manual qualifiers were not required.

Method/Analysis Information

Product:Liquid Scint C14, Solid All,FSSAnalytical Method:EPA EERF C-01 ModifiedAnalytical Batch Number:462176

Sample ID	Client ID
144481018	9527-0002-004F
144481019	9527-0002-009F
144481020	9527-0002-012F
1200934805	Method Blank (MB)
1200934806	144481020(9527-0002-012F) Sample Duplicate (DUP)
1200934807	144481020(9527-0002-012F) Matrix Spike (MS)
1200934808	Laboratory Control Sample (LCS)

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by General Engineering Laboratories, LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-003 REV# 8.

Calibration Information:

Calibration Information

All initial and continuing calibration requirements have been met.

Standards Information

Standard solution(s) for these analyses are NIST traceable and used before the expiration date(s).

Sample Geometry

All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information

The blank volume is representative of the sample volume in this batch.

Designated QC

The following sample was used for QC: 144481020 (9527-0002-012F).

QC Information

All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time

All sample procedures for this sample set were performed within the required holding time.

Preparation Information

All preparation criteria have been met for these analyses.

Sample Re-prep/Re-analysis

Samples 1200934806 (9527-0002-012F), 144481018 (9527-0002-004F) and 144481020 (9527-0002-012F) were recounted due to lumex interference.

Miscellaneous Information:

NCR Documentation

Nonconformance reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following NCR was generated for this SDG: NCR 249647 was generated due to RDL less than MDA. 1. Sample 144481020 failed to meet the detection limit. The project manager was contacted, and permission was received to report the data. 1. Reporting results.

Qualifier information

Manual qualifiers were not required.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Review Validation:

GEL requires all analytical data to be verified by a qualified data validator. In addition, all data designated for CLP or CLP-like packaging will receive a third level validation upon completion of the data package. The following data validator verified the information presented in this case narrative:

Reviewer: Lunch 10/3/05

	COMPANY - WIDE NONC	CONFORMANCE REPORT	
Mo.Day Yr. 23-SEP-05	Division: Radiochemistry	Quality Criteria: Type: Specifications Process	
Instrument Type: LSC	Test / Method: EPA EERF C-01 Modified	Matrix Type: Client Code: Solid YANK001	
Batch ID: 462176	Sample Numbers: 144481020		
Potentially affected Application Issues: RDL less than MDA	work order(s)(SDG): 144481(MSR#05-2161), 144635	,144666(EUI-3891)	
Specification and R Nonconformance D	equirements escription:	NRG Disposition:	
1. Sample 1444810 manager was conta	20 failed to meet the detection limit. The project icted, and permission was received to report the data.	1. Reporting results.	
Originator's Name:		Data Validator/Group Leader:	
John Parker	23-SEP-05	Melanie Aycock 27-SEP-05	

Quality Review:

Director:



2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gei.com

Certificate of Analysis Report for

YANK001 Connecticut Yankee Atomic Power Co.

Client SDG: MSR#05-2161 GEL Work Order: 144481

The Qualifiers in this report are defined as follows:

- ** Indicates the analyte is a surrogate compound.
- < Result is less than amount reported.
- > Result is greater than amount reported.
- **B** Target analyte was detected in the sample as well as the associated blank.
- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.
- P The response between the confirmation and the primary columns is >40% Different.
- R Sample results are rejected.
- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- Y QC Samples were not spiked with this compound.
- Z Paint Filter qualifier: Particulates passed through the filter. No free liquids were observed.
- The 2:1 depletion requirement was not met for this sample d
- h Sample preparation or preservation holding time exceeded.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis. ** Indicates the analyte is a surrogate compound.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.

Lind

Reviewed by

· · —

Certificate of Analysis

Company : Address : Contact: Project:	Connecticu Haddam Ne 362 Injun H East Hampt Mr. Pete He Soils PO# C Client Sar Sample II	t Yankee A eck Plant follow Road on, Connecc ollenbeck 002332 mple ID: D:	tomic Power d cticut 06424	9527-00 1444810 TS	002-001F 001		Project: Client ID: Vol. Recy :	Report Date: October 3, 2005 YANK01204 YANK001				
	Collect Da Receive D Collector: Moisture:	ate: Date:		23-AU 01-SEP Client 10.6%	G-05 -05							
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time Ba	tch M	
Rad Gamma Spec Ana	lysis											
Gamma,Solid-FSS GA	AM & ALL FSS	5										
Actinium-228		0.494	+/-0.135	0.0508	+/-0.132	0.109	pCi/g		MJH1 09/29/0	5 1308 4595	42 1	
Americium-241	U	-0.0364	+/0.0647	0.0528	+/-0.0634	0.109	pCi/g					
Bismuth-212		0.276	+/-0.249	0.111	+/0.244	0.237	pCi/g					
Bismuth-214		0.644	+/-0.118	0.030	+/-0.116	0.063	pCi/g					
Cesium-134	U	0.0213	+/-0.0255	0.0191	+/-0.025	0.0404	pCi/g					
Cesium-137		1.38	+/-0.155	0.0149	+/-0.152	0.0315	pCi/g					
Cobalt-60	U	0.0206	+/-0.0216	0.017	+/-0.0211	0.0367	pCi/g					
Europium-152	U-	-0.000864	+/-0.0540	0.0441	+/-0.0535	0.0918	pCl/g					
Europium-154	U	0.0217	+/-0.0313	0.0431	+/-0.0503	0.0930	pCVg					
Europium-155	U	0.045	+/-0.000	0.0425	+/-0.004/	0.0572	pCi/g					
Lead-212 Lead-214		0.393	+/0.0390	0.0277	+/0.0364	0.0373	pCi/g					
Manganese-54	II	-0.0152	+/-0 0205	0.051	+/0.0201	0.0040	nCi/g					
Niobium-94	U	0.00785	+/-0.0178	0.0148	+/-0.0174	0.0312	nCi/g					
Potassium-40	Ū	5.69	+/-0.698	0.128	+/-0.684	0.283	pCi/g					
Radium-226		0.644	+/-0.118	0.030	+/-0.116	0.063	pCi/g					
Silver-108m	U	-0.0171	+/-0.0186	0.0139	+/-0.0183	0.0292	pCi/g					
Thallium-208		0.171	+/-0.0499	0.0144	+/-0.0489	0.0306	pCi/g					
Rad Gas Flow Proporti	ional Counting	g										
GFPC, Sr90, solid – 0	.025 pCi/g											
Strontium-90		0.0189	+/-0.00732	0.00555	+/0.00733	0.0115	nCi/g		EXW109/25/0	5 2334 4641	87 2	
Rad Liquid Scintillation	n Analysis						F0					
ISC Tritium Dist Sol	Id-HTD2 ALL	FSS										
Tritium		2 04	+/6 02	<u> </u>	+/6 02	10.2	pCi/a		MXP1 00/10/0	5 1352 4616	85 3	
	Ū	515 1			.,	10.2	P018					
The following Pren M	ethods were n	erformed										

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0913	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653
The following A	Analytical Methods were performed				
Method	Description				

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Certificate of Analysis

Company : Address :	Connecticut Haddam Nec 362 Injun Ho Fast Hampto	Yankee A k Plant ollow Roa	tomic Power d				P	enort Dat	ret October 3 2	005	
Contact:	Mr. Pete Hol	llenbeck					K	cport Da		005	
Project:	Soils PO# 00	02332									
	Client Sam Sample ID	ple ID:		9527-0 0 1 4 44810	02001F 01		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
1 EML	HASL 300, 4.	5.2.3									
2 EPA 9	05.0 Modified	i									
3 EPA	06.0 Modified	1									
Surrogate/Tracer recov	ery Test				Recovery%	Ac	cceptable Limit	5			
Carrier/Tracer Recovery	GFPG	C, Sr90, so	olid – 0.025 pCi/	g	61		(25%-125%)				

Notes:

2 3

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

Х Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

The 2:1 depletion requirement was not met for this sample d

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Nea 362 Injun H East Hampto Mr. Pete Ho Soils PO# 00	Yankee A ck Plant ollow Road on, Connec illenbeck 02332	tomic Power J ticut 06424				F	Report Date: October 3, 2005					
	Client Sam Sample ID Matrix: Collect Da Receive Da Collector: Moisture:	nple ID: b: ate: ate:		9527-00 1444810 TS 23-AU0 01-SEP Client 14.1%	002-001FS 002 3-05 -05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001				
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M		
Rad Gamma Spec Analy	ysis												
Gamma, Solid-FSS GA	M & ALL FSS												
Actinium-228		0.449	+/-0.255	0.167	+/-0.250	0.352	pCi/g		MJH1 09/25/03	5 2302	459542 1		
Americium-241	U	0.0676	+/-0.0599	0.0417	+/-0.0587	0.0858	pCi/g						
Bismuth-212	U	0.470	+/0.331	0.286	+/-0.325	0.607	pCi/g						
Bismuth-214		0.860	+/-0.184	0.0639	+/-0.181	0.135	pCi/g						
Cesium-134	02.	.310E-03	+/0.0440	0.0340	+/-0.0437	0.0745	pCi/g						
Cesium-137		2.18	+/0.210	0.0300	+/-0.212	0.0004	pCl/g						
Cobalt=00	U	0.021	+/-0.040	0.038/	+/-0.0451	0.0842	pCl/g						
Europium-152	U	-0.0348	+/0.114	0.08/5	+/-0.111	0.185	pCl/g						
Europium-154	U U	0.104	±/-0.134	0.0802	+/-0.131 +/0.0058	0.191	pCi/g						
Land-212	U	0.0340	+/-0.0976	0.0747	+/-0.0938	0.134	pCi/g						
Lead-214		1 10	+/-0.132	0.0472	+/-0.125	0.0978	pCi/g						
Manganese-54	T	0.0156	+/0.0415	0.0033	+/0 0407	0.155	pCi/g						
Nichium-94	U U	0.0150	+/0.0395	0.0347	+/0.0387	0.0745	pCi/g						
Potassium-40	U	5 51	+/-1.15	0.0517	+/1 13	0.684	pCi/g						
Radium-226		0.860	+/0.184	0.0639	+/-0.181	0.135	nCi/g						
Silver-108m	U	-0.0107	+/0.0416	0.0323	+/-0.0408	0.0676	pCi/g						
Thallium-208	-	0.158	+/0.0722	0.0398	+/-0.0708	0.0836	pCi/g						
Rad Gas Flow Proportio	onal Counting	•											
GFPC, Sr90, solid - 0	025 nCi/o												
Strontium-90		0 0946	+/0 00938	0 00465 -	+/0 00965	0 00972	nCi/a		EXW109/25/04	5 2334	464187 2		
Rad Liquid Scintillation	Analysis	0.0710		0.00100	.,	0.00774	r~*6						
ISC Tritium Dist Solid	-HTD2 ALL	FSS											
Tritium	U	5.33	+/-6.11	4.88	+/6.11	10.2	pCi/g		MXP1 09/19/0	5 1426	461685 3		
	5				3		r0						

The following	Prep Methods were performed					
Method	Description	Analyst	Date	Time	Prep Batch	
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654	
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653	
The following	Analytical Methods were performed					
Method	Description					
1	EML HASL 300, 4.5.2.3					

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Certificate of Analysis

Company : Address :	Connecticut Haddam Neo 362 Injun Ho East Hampto	Yankee A ck Plant ollow Roa on. Conne	tomic Power d cticut 06424				Re	port Dat	te: October 3, 2	2005	
Contact:	Mr. Pete Ho	llenbeck						•	· · · · · · · · · · · · · · · · · · ·		
Project:	Soils PO# 00	02332									
	Client Sam Sample ID	iple ID: :		9527-0 0 1444810	02-001FS 02		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2 EPA	905.0 Modifie	d.					···· ··· ··· ··· ··· ··· ··· ··· ··· ·				
3 EPA	906.0 Modifie	d									
Surrogate/Tracer recov	very Test				Recovery%	A	cceptable Limits				
Carrier/Tracer Recovery	GFPG	C, Sr90, so	olid – 0.025 pCi/	g	48		(25%-125%)				
Notes:											

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- Indicates an estimated value. J

- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- The 2:1 depletion requirement was not met for this sample d
- Sample preparation or preservation holding time exceeded. h

Certificate of Analysis

Company : Address : Contact: Project:	Connecticu Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	t Yankee A eck Plant follow Road ton, Connec ollenbeck 002332	tomic Power d ticut 06424				Report Date: October 3, 2005 Project: YANK01204					
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: Date:		9527-00 1444810 TS 23-AU0 01-SEP Client 12.6%	002-002F 003 G-05 05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001			
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Rad Gamma Spec Anal	ysis											
Gamma,Solid-FSS GA	M & ALL FSS	5										
Actinium-228	•••	0.689	+/-0.232	0.0675	+/-0.228	0.143	pC1/g		MJH1 09/29/03	1307	459542 1	
Americium-241	U	0.0332	+/-0.03/8	0.0272	+/-0.0371	0.0554	pCi/g					
Bismum-212 Dismuth-214	001	0.00	+/0.219	0.100	+/-0.215	0.391	pCl/g					
Bismuin=214 Cosium=134	TT.	0.929	+/-0.133	0.0303	+/-0.132	0.0737	pCi/g					
Cesium-134	U	0.0441	+/-0.0330	0.020	+/-0.0323	0.0342	pCrg					
Cobalt-60	TT.	0.0708	+/0.0993	0.0213	+/-0.0975	0.0446	pCi/g					
Euronium-152	U U	-0 0787	+/-0.0657	0.0224	+/-0.0644	0.0470	pCl/g					
Europium 152	U U	0.0143	+/0.076	0.0520	+/-0.0745	0.133	pCi/g					
Europium-155	U U	0.0739	+/-0.0714	0.0443	+/-0.070	0.0904	pCi/g					
Lead-212	Ũ	0.816	+/-0.106	0.0309	+/-0.103	0.0634	nCi/g					
Lead-214		0.984	+/-0.143	0.0379	+/-0.140	0.0782	pCi/g					
Manganese-54	U	-0.0117	+/-0.026	0.0209	+/-0.0254	0.0438	pCi/g					
Niobium-94	Ū	-0.00116	+/-0.0234	0.0185	+/-0.0229	0.0387	pCi/g					
Potassium-40		10.5	+/-0.996	0.167	+/-0.977	0.363	pCi/g					
Radium-226		0.929	+/0.135	0.0363	+/0.132	0.0757	pCi/g					
Silver-108m	U	-0.00785	+/-0.0223	0.0178	+/0.0219	0.0369	pCi/g					
Thallium-208		0.316	+/-0.0573	0.0193	+/-0.0562	0.0402	pCi/g					
Rad Gas Flow Proportio	onal Counting	g										
GFPC, Sr90, solid – 0.	025 pCi/g											
Strontium-90		0.0123	+/-0.00639	0.00482 -	+/-0.00639	0.0101	pCi/g		EXW109/25/05	2334	464187 2	
Rad Liquid Scintillation	Analysis											
- LSC. Tritium Dist. Solid	d-HTD2 ALL	FSS										
Tritium	<i></i> ,	1 58	+/-5.33	4.41	+/-5.33	9.20	nCi/g		MXP1 09/24/04	2127	464550 4	
	Ũ	1.50	., 5,55			7.20	r~"₽					

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653
The following A	Analytical Methods were performed				
Method	Description				
1	EML HASL 300, 4.5.2.3				

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Certificate of Analysis

	Company :	Connecticut	Yankee A	tomic Power								
	Address :	Haddam Ne	ck Plant									
		362 Injun H	ollow Roa	d								
		East Hampto	on, Conne	cticut 06424				Rep	ort Da	te: October 3, 2	.005	
	Contact:	Mr. Pete Ho	llenbeck									
	Project:	Soils PO# 0	02332									
		Client San Sample ID	ple ID: :		952700 1444810	02-002F 03		Project: Y Client ID: Y Vol. Recv.:	(ANK (ANK	01204 001		
Pars	ameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modifie	d									
3	EPA 9	06.0 Modifie	d									
4	EPA 9	06.0 Modifie	d									
Surro	gate/ Tra cer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier	Tracer Recovery	GFP	C, Sr90, s	olid – 0.025 pCi	/g	49		(25%-125%)				

Notes:

2 3 4

The Qualifiers in this report are defined as follows :

****** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
 H Analytical holding time exceeded.
- J Indicates an estimated value.
- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample

Sample preparation or preservation holding time exceeded. h

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	t Yankee A ock Plant follow Road on, Connec ollenbeck 002332	tomic Power 1 ticut 06424				I	Report Dat	te: October 3, 2	005	
	Client San Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: ate:		9527-00 1444810 TS 23-AUC 01-SEP Client 8.57%	002-003F 004 G-05 05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	ysis										
Gamma,Solid-FSS GA	M & ALL FSS	5									
Actinium-228		1.15	+/-0.130	0.0417	+/0.127	0.0876	pCi/g		MJH1 09/28/05	5 2214	459542 1
Americium-241	U	0.0272	+/-0.100	0.0786	+/-0.0982	0.161	pCi/g				
Bismuth-212		0.854	+/-0.340	0.0993	+/-0.334	0.207	pCi/g				
Bismuth-214		0.973	+/0.0923	0.0264	+/-0.0905	0.0547	pCi/g				
Cesium-134	UUI	0.00	+/-0.0333	0.0178	+/-0.0327	0.0367	pCi/g				
Cesium-137		0.960	+/-0.0514	0.0142	+/-0.0503	0.0294	pCi/g				
Cobalt-60	001	0.00	+/-0.0411	0.0122	+/-0.0403	0.026	pCi/g				
Europium-152	U	-0.023	+/-0.0452	0.0372	+/-0.0443	0.0766	pCi/g				
Europium-154	U	0.00577	+/-0.0546	0.038	+/-0.0535	0.0801	pCvg				
Europium-155	U	0.0556	+/-0.0595	0.0433	+/-0.0583	0.0886	pC1/g				
		1.25	+/-0.0004	0.0221	+/0.0392	0.0454	pCl/g				
		1.14	$\pm / -0.0733$	0.0230	+/-0.0736	0.0328	pCVg				
Manganese-54	U	0.00743	+/-0.01/3	0.014/	+/-0.01/1	0.0300	pCi/g				
Potassium-40	U	0.00737	+/-0.0132	0.0124	+/-0.0149	0.0230	pCi/g				
Padium-226		0 073	+/0 0023	0.114	+/0 0005	0.243	pCilg				
Silver-108m	11	0.973	+/-0.0155	0.0204	+/0.0152	0.0347	pCi/g				
Thallium-208	Ũ	0.362	+/0.0417	0.0135	+/-0.0409	0.0205	nCi/g				
Rad Gas Flow Proportio	al Counting	3		0.0155		0.020	1018				
GFPC. Sr90. solid - 0.	025 pCi/g										
Strontium-90	 ບ	0.00358	+/0.00634	0.00519-	+/-0.00634	0.0108	pCi/g		EXW109/25/05	5 2334	464187 2
Rad Liquid Scintillation	Analysis						r0				
ISC Tritism Dist Sali		FSS									
Tritium	4-11102,ALL 11	1 20 1 20	±/K AK	A 40	±/= \$ \$\$	0.26	·Cila		MYD1 00/04/04	2150	161550 1
1141000	U	2.30	<i>∓₁−</i> ᢖ . 43	4.40	T/-J.4J	7.33	իշր ք		WIAF I 07/24/03	2139	404330 4

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653
The following A	Analytical Methods were performed				
Mathod	Description			· · · · · ·	

Method	
1	EML HASL 300, 4.5.2.3

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Certificate of Analysis

C A C P	ompany : ddress : ontact: roject:	Connecticut Haddam Nec 362 Injun Ho East Hampton Mr. Pete Holl Soils PO# 00	Yankee A k Plant llow Roa n, Connee lenbeck 2332	tomic Power d cticut 06424				Re	port Da	te: October 3, 2	005	
		Client Sam Sample ID:	ple ID:		9527-00 1444810	02–003F 04		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modified	l									
3	EPA 9	06.0 Modified	l									
4	EPA 9	06.0 Modified	l									
Surrogate/Tra	icer recov	ery Test	_			Recovery%	Ac	ceptable Limits				
Carrier/Tracer I	Recovery	GFPC	C, Sr90, so	olid - 0.025 pCi/	'g	59		(25%-125%)				

Notes:

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.H Analytical holding time exceeded.
- J Indicates an estimated value. U Target analyte was analyzed

Target analyte was analyzed for but not detected above the MDL or LOD.

- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	Connecticut Yankee Atomic Power Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Report Date: October 3, 200 Mr. Pete Hollenbeck Soils PO# 002332							005		
	Client Sam Sample III Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: ate:		9527-00 1444810 TS 23-AU0 01-SEP Client 20.4%	002-005F 005 G-05 05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	sis	_									
Gamma,Solid-FSS GA	M & ALL FSS										
Actinium-228		0.820	+/-0.234	0.0924	+/-0.229	0.198	pCi/g		MJH1 09/25/0	5 2302	459542 1
Americium-241	U	0.0474	+/-0.0599	0.0279	+/-0.0587	0.0575	pCi/g				
Bismuth-212		0.527	+/-0.294	0.208	+/-0.288	0.441	pCi/g				
Bismuth-214		1.53	+/-0.209	0.0453	+/-0.204	0.0957	pCi/g				
Cesium-134	U	0.0554	+/-0.035	0.0307	+/-0.0343	0.0651	pCi/g				
Cesium-137		0.588	+/-0.0873	0.0284	+/-0.0856	0.0598	pCi/g				
Cobalt-60	U	~0.0193	+/-0.0333	0.0245	+/-0.0327	0.0541	pCi/g				
Europium-152	U	0.0238	+/-0.0789	0.0619	+/-0.0773	0.129	pCi/g				
Europium-154	U	~0.0222	+/0.104	0.0814	+/-0.102	0.176	pCi/g				
Europium-155	001	0.00	+/0.0990	0.0441	+/-0.0976	0.0913	pCl/g				
		0.890	+/-0.123	0.0320	+/-0.121	0.0675	pCi/g				
		1.75	+/-0.219	0.0434	T/TU.214	0.0940	pCl/g				
Nianganese-54	U	-0.0249	+/-0.0397	0.0248	+/-0.0369	0.0331	pCl/g				
Potassium-40	U	0.014/	+/-1.0282	0.0251	+/-1.02/0	0.049	pCi/g				
Redium-226		1.50	+/0 209	0.453	+/0 204	0.0057	pCl/g				
Silver-108m	11	-0.0179	+/-0 0252	0.0433	+/-0 0247	0.0937	pCl/g				
Thallium-208	U	0.259	+/-0.0771	0.0231	+/-0.0756	0.0419	nCi/g				
Rad Gas Flow Proportio	nal Counting	g		0.0201		0.0107	P~28				
GFPC Sr00 solid - 01	025 nCi/a										
Strontium-90	22 PC*8	0.00860	+/0.00526	0 00402 -	+/0 00526	0 00842	nCi/a		FXW100/25/0	\$ 2334	464187 2
Rad Liquid Scintillation	Analysis	0.00000	.7 0.00020	V.VV7V4	., 0.00220	V.VVV74	P.0.8		222112072070		101107 2
ISC Tritism Diet Sali	I-HTD? ALL	FSS									
Tritium	• 111 <i>126,ALL</i> 11	1.00	±/K 26	A A7	+1_8 26	0.72	TC:/-		MYD1 00/94/04	\$ 2221	A64550 A
11111111	U	1.04	+7-3.30	4.44	-7-5.50	9.23	peng		WLAF I 09/24/0	, 2231	-104JJU 4

The following	The following Prep Methods were performed									
Method	Description	Analyst	Date	Time	Prep Batch					
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654					
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653					
The following A	Analytical Methods were performed									
Method	Description									
1	EML HASL 300, 4.5.2.3			- <u></u>						

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Certificate of Analysis

	Company :	Connecticut	Yankee A	tomic Power								
	Address :	Haddam Neo	ck Plant									
		362 Injun He	ollow Roa	d								
		East Hampto	on, Conne	cticut 06424				Re	port Dat	te: October 3, 2	:005	
	Contact:	Mr. Pete Ho	llenbeck									
	Project:	Soils PO# 0	02332									
		Client Sam Sample ID	nple ID: :		9527-00 1444810	02005F 05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Param	eter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modifie	d			<u> </u>						
3	EPA 9	06.0 Modifie	d									
4	EPA 9	06.0 Modifie	d									
Surrogat	e/Tracer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier/Tr	acer Recovery	GFPG	C, Sr90, so	olid – 0.025 pCi	/g	57		(25%-125%)				

Notes:

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value.
 U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0 Client San Sample II Matrix: Collect Da Receive D	t Yankee A eck Plant follow Road on, Connec ollenbeck 02332 nple ID: o: ate: late:	tomic Power d :ticut 06424	9527-00 1444810 TS 23-AU0 01-SEP Client	002006F 006 G05 '05		Froiect: Client ID: Vol. Recv.:	Report Da YANK YANK	ie: October 3, 2 01204 001	005	
	Moisture:			10.3%							
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	/sis									<u> </u>	
Gamma,Solid-FSS GA	M & ALL FSS	5									
Actinium-228		0.460	+/-0.209	0.0761	+/0.205	0.167	pCi/g		МЛН1 09/29/03	5 2023	459542 1
Americium-241	U	0.0767	+/-0.111	0.0843	+/0.108	0.176	pCi/g				
Bismuth-212		0.594	+/0.347	0.145	+/-0.340	0.318	pCi/g				
Bismuth-214		0.703	+/-0.103	0.037	+/~0.101	0.0801	pCi/g				
Cesium-134	U	0.00645	+/0.0304	0.025	+/-0.0298	0.0541	pCi/g				
Cesium-137		0.761	+/-0.0816	0.0208	+/-0.080	0.0451	pCi/g				
Cobalt-60	U	0.0107	+/-0.0261	0.0225	+/0.0256	0.0507	pCi/g				
Europium-152	U	0.0175	+/-0.0691	0.0559	+/-0.0677	0.119	pCi/g				
Europium-154	U	0.0607	+/-0.0798	0.0717	+/0.0782	0.159	pCi/g				
Europium-155	UUI	0.00	+/-0.0847	0.0493	+/-0.083	0.103	pCi/g				
Lead-212		0.488	+/-0.0712	0.0302	+/-0.0698	0.0634	pCi/g				
Lead-214		0.830	+/-0.123	0.0359	+/-0.121	0.0766	pCi/g				
Manganese-54	U	0.0116	+/-0.028	0.0234	+/0.0274	0.0507	pCi/g				
Niobium-94	U	0.0115	+/-0.0234	0.0199	+/-0.0229	0.0428	pCi/g				
Potassium-40		6.28	+/0.988	0.173	+/0.968	0.401	pCi/g				
Radium-226		0.703	+/-0.103	0.037	+/-0.101	0.0801	pCi/g				
Silver-108m	U	-0.0292	+/-0.0239	0.0181	+/-0.0234	0.0389	pCi/g				
Thallium-208		0.173	+/-0.0501	0.0212	+/-0.0491	0.0457	pCi/g				
Rad Gas Flow Proportio	nal Counting	s									
GFPC, Sr90, solid – 0.	025 pCi/g										
Strontium-90		0.0277	+/0.00508	0.00303 -	+/0.00511	0.00638	pCi/g		EXW109/25/05	5 2334 ·	464187 2
Rad Liquid Scintillation	Analysis										
LSC, Tritium Dist, Solid	I-HTD2,ALL	FSS									
Tritium	υ	-1.01	+/-5.36	4.55	+/5.36	9.49	pCi/g		MXP1 09/24/03	5 2303	464550 4

The following Prep Methods were performed								
Method	Description	Analyst	Date	Time	Prep Batch			
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654			
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B JI	09/06/05	0751	459653			
The following A	Analytical Methods were performed							
Method	Description							

	-
1	EML HASL 300, 4.5.2.3

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Certificate of Analysis

	Company :	Connecticut	Yankee A	tomic Power								
	Address :	Haddam Ne	ck Plant									
		362 Injun H	ollow Roa	d								
		East Hampt	on, Conne	cticut 06424				R	eport Dat	te: October 3, 2	005	
	Contact:	Mr. Pete Ho	llenbeck						•			
	Project:	Soils PO# 0	02332									
		Client San Sample ID	nple ID:):		9527-00 1444810	02-006F 06		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parame	ter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modifie	:d									
3	EPA 9	06.0 Modifie	d									
4	EPA 9	06.0 Modifie	d									
Surrogate	Tracer recov	ery Test				Recovery%	Ac	ceptable Limit	5			
Carrier/Tra	cer Recovery	GFP	C, Sr90, so	olid - 0.025 pCi	/g	68		(25%-125%)				

Notes:

2 3 4

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

The 2:1 depletion requirement was not met for this sample d

Sample preparation or preservation holding time exceeded. h

Certificate of Analysis

Company : Address : Contact:	Connecticut Yankee Atomic Power Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Mr. Pete Hollenbeck Report Date: October 3, 2005										
Project:	Soils PO# (002332									
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	mple ID: D: ate: Date:		9527–00 1444810 TS 23–AU0 01–SEP Client 9.5%	002007F 007 G-05 05		Proiect: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	ysis										
Gamma,Solid-FSS GA	M & ALL FS	5									
Actinium-228		0.885	+/0.157	0.0513	+/0.154	0.108	pCi/g		MJH1 09/29/0	5 2119 4	59542 1
Americium-241	U	0.0133	+/0.122	0.0934	+/-0.119	0.192	pCi/g				
Bismuth-212		0.677	+/-0.309	0.118	+/-0.303	0.247	pCi/g				
Bismuth-214		1.06	+/-0.0975	0.0333	+/-0.0955	0.0689	pCi/g				
Cesium-134	UUI	0.00	+/-0.032	0.0156	+/0.0314	0.0328	pCi/g				
Cesium-137		1.38	+/0.073	0.0154	+/-0.0715	0.0322	pCi/g				
Cobalt-60	UUI	0.00	+/-0.0453	0.0188	+/0.0444	0.0397	pCi/g				
Europium-152	U	-0.0293	+/0.0548	0.0446	+/-0.0537	0.0922	pCi/g				
Europium-154	U	-0.0158	+/-0.0554	0.043	+/0.0543	0.0918	pCi/g				
Europium-155	UUI	0.00	+/-0.0701	0.0495	+/-0.0687	0.102	pCi/g				
Lead-212		0.989	+/-0.0669	0.0262	+/0.0655	0.0539	pCi/g				
Lead-214		1.39	+/0.105	0.0308	+/-0.103	0.0637	pCi/g				
Manganese-54	U	0.0179	+/-0.0294	0.0154	+/-0.0288	0.0324	pCi/g				
Niobium-94	U	-0.00491	+/-0.0179	0.0139	+/-0.0175	0.029	pCi/g				
Potassium-40		9.97	+/-0.683	0.134	+/-0.669	0.289	pCi/g				
Radium-226		1.06	+/0.0975	0.0333	+/-0.0955	0.0689	pCi/g				
Silver-108m	U-	-0.000648	+/-0.0184	0.015	+/-0.0181	0.0312	pCi/g				
Thallium-208		0.288	+/-0.0425	0.0164	+/0.0416	0.0341	pCı/g				
Rad Gas Flow Proportio	onal Counting	g									
GFPC, Sr90, solid - 0.	025 pCi/g										
Strontium-90		0.0182	+/0.00613	0.00434 -	+/-0.00615	0.0091	pCi/g		EXW109/25/0	5 2335 4	64187 2
Rad Liquid Scintillation	Analysis										
LSC, Tritium Dist. Solid	i-HTD2.ALL	FSS									
Tritium	์ บ	2.24	+/5.91	4.86	+/-5.91	10.2	pCi/g		MXP1 09/19/03	5 1712 4	61685 3

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653

1 EML HASL 300, 4.5.2.3

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Certificate of Analysis

Company : Address :	Connecticut Yankee Atomic Powe Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424	r	Rep	port Date: October 3, 2005
Contact:	Mr. Pete Hollenbeck		•	
Project:	Soils PO# 002332			
	Client Sample ID: Sample ID:	9527-0002-007F 144481007	Project: Y Client ID: Y Vol. Recv.:	(ANK01204 (ANK001
Parameter	Qualifier Result Uncertai	ity LC TPU	MDA Units	DF AnalystDate Time Batch
2 EPA	905.0 Modified			
3 EPA	906.0 Modified			
Surrogate/Tracer recov	very Test	Recovery%	Acceptable Limits	
Carrier/Tracer Recovery	GFPC, Sr90, solid - 0.025	pCi/g 56	(25%-125%)	

Notes:

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.
- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample
- Sample preparation or preservation holding time exceeded. h

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0 Client San Sample ID Matrix: Collect Da Receive D	t Yankee A ek Plant follow Road on, Connec ollenbeck 02332 nple ID: o: ate: ate: ate:	tomic Power 1 ticut 06424	9527-00 1444810 TS 23-AU0 01-SEP	002-008F 008 G-05 '-05		F Project: Client ID: Vol. Recv.:	eport Dat YANK YANK	te: October 3, 2 01204 001	005	
	Moisture:			8.18%							
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	sis				<u> </u>						·······
Gamma,Solid-FSS GA	M & ALL FSS	5									
Actinium-228		0.852	+/-0.243	0.0835	+/0.238	0.184	pCi/g		MJH1 09/29/05	5 1726 -	459542 1
Americium-241	U	0.0215	+/-0.0437	0.0371	+/-0.0428	0.0766	pCi/g				
Bismuth-212		0.719	+/0.400	0.210	+/0.392	0.452	pCi/g				
Bismuth-214		1.26	+/0.208	0.0445	+/0.203	0.096	pCi/g				
Cesium-134	U	0.0443	+/-0.055	0.0365	+/-0.0539	0.078	pCi/g				
Cesium-137		0.516	+/-0.0798	0.0281	+/-0.0782	0.0603	pCi/g				
Cobalt-60	U	-0.00522	+/-0.0303	0.0248	+/-0.0297	0.0562	pCi/g				
Europium-152	U	-0.0131	+/-0.0757	0.062	+/-0.0742	0.131	pCi/g				
Europium-154	U	-0.0363	+/-0.114	0.0866	+/0.111	0.191	pCi/g				
Europium-155	U	0.00268	+/-0.0671	0.0542	+/-0.0657	0.113	pCi/g				
Lead-212		0.855	+/-0.108	0.0361	+/-0.106	0.0755	pCi/g				
Lead-214		1.18	+/0.188	0.044	+/-0.185	0.0931	pCl/g				
Manganese-54	0	0.0088	+/-0.0336	0.0280	+/-0.0329	0.0619	pCl/g				
Niobium-94	U	-0.00517	+/-0.0313	0.0239	+/0.0300	0.0555	pCi/g				
Potassium-40 Dadium-226		9.02	+/-1.14 +/-0.209	0.109	+/~1.12	0.444	pCi/g				
Silver-108m	11	-0.012	+/0.208	0.0443	+/0 0276	0.090	pCl/g				
Thallium-208	0	0.012	+/0.0201	0.0221	+/0.0788	0.047	pCi/g				
Rad Gas Flow Proportio	nal Counting	0.200	17 0.0004	0.0511	., 0.0700	0.000	ben B				
CEDC S-00 lid 0	026 - <i>C</i> :/-	Ð									
GFPC, SF90, Solia - 0.0	025 pCVg	0.0100	1/ 0.00745	0.00672	1 0 00746	0.010	-0:1-		EXXV100/25/0/	5 2226	464107 7
Strontium-90	A H	0.0122	+/-0.00/45	0.00572	+/-0.00746	0.012	pC1/g		EXW109/25/0:	3 2333 4	40418/2
kau Liquia Scintillation	Analysis										
LSC, Tritium Dist, Solid	i–HTD2,ALL	FSS									
Tritium	U	4.87	+/-5.97	4.79	+/-5.97	10.0	pCi/g		MXP1 09/19/0:	5 1745	461685 3

The following Prep Methods were performed							
Method	Description	Analyst	Date	Time	Prep Batch		
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654		
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B JI	09/06/05	0751	459653		
The following A	Analytical Methods were performed						
Mathad	Description						

Description Method 1 EML HASL 300, 4.5.2.3

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Certificate of Analysis

	Company : Address :	Connecticut Yankee Atomic Power Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Report Da					port Dat	te: October 3, 2	:005			
	Contact:	Mr. Pete Hol	llenbeck									
	Project:	Soils PO# 00	02332									
		Client Sam Sample ID	iple ID: :		9527-00 1444810	02-008F 08		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Paramete	e r	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modified	d									
3	EPA 9	06.0 Modified	d									
Surrogate/	Tracer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier/Trace	er Recovery	GFPC	C, Sr90, so	olid - 0.025 pCi/	g	45		(25%-125%)				
Notes:												

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.

- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample
- h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	t Yankee A eck Plant lollow Road on, Connec ollenbeck 02332	tomic Power 1 ticut 06424				F	Report Da	te: October 3, 2	005	
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: bate:		9527-00 1444810 TS 23-AU0 01-SEP Client 15.6%	002-010F 009 G-05 -05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	ysis										
Gamma,Solid-FSS GA	M & ALL FSS	5									
Actinium-228	UUI	0.00	+/0.227	0.159	+/-0.222	0.330	pCi/g		MJH1 09/29/0	5 2026	459542 1
Americium-241	U	-0.078	+/-0.145	0.114	+/0.142	0.233	pCi/g				
Bismuth-212	U	0.226	+/0.473	0.207	+/-0.464	0.437	pCi/g				
Bismuth-214		1.74	+/-0.237	0.0501	+/-0.232	0.105	pCl/g				
Cesium-134	UUI	0.00	+/-0.056	0.0318	+/-0.0549	0.0672	pCvg				
Cesium-137		1.33	+/0.152	0.0247	+/0.149	0.0524	pCVg				
	U	-0.015	+/-0.0338	0.0204	+/-0.0331	0.0013	pCl/g				
Europium-152	U	-0.0203	+/-0.0998 +/-0.009	0.0092	+/-0.0978	0.144	pCi/g				
Europium-154	U	0.0327		0.0723	+/-0.0902	0.109	pCi/g				
Lutopium-155	U	0.0005	+/	0.0732	+/-0.0903	0.130	pCi/g				
Lead-214		1 03	+/0 244	0.0402	+/0.230	0.0020	pCl/g				
Manganese-54	11	0.00674	+/0 0331	0.0307	+/-0.0325	0.0585	pCi/g				
Niobium-94	U U	0.00236	+/-0 0299	0.0237	+/-0.0293	0.0505	nCi/g				
Potassium-40	U	8.11	+/-1.08	0.227	+/-1.06	0.501	pCi/g				
Radium-226		1.74	+/-0.237	0.0501	+/-0.232	0.105	pCi/g				
Silver-108m	U	-0.00238	+/-0.0328	0.0263	+/-0.0321	0.0547	pCi/g				
Thallium-208		0.175	+/0.0722	0.0274	+/-0.0708	0.0576	pCi/g				
Rad Gas Flow Proportio	onal Counting	5									
GFPC, Sr90, solid - 0.	025 pCi/g										
Strontium-90		0.0578	+/0.00537	0.00261 -	+/-0.00569	0.00546	pCi/g		EXW109/25/0	5 2335	464187 2
Rad Liquid Scintillation	Analysis						F0				
LSC, Tritium Dist. Solid	d-HTD2,ALL	FSS									
Tritium	Ŭ	8.57	+/7.41	5.83	+/-7.42	12.2	pCi/g		MXP1 09/19/0	5 1819	461685 3

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653
The following	Analytical Methods were performed				
Method	Description				
1	EML HASL 300, 4.5.2.3				·····

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Certificate of Analysis

	Company : Address : Contact: Project:	Connecticut Haddam Nec 362 Injun Ho East Hampto Mr. Pete Hol Soils PO# 00	Yankee A k Plant ollow Road n, Connec lenbeck	tomic Power d ticut 06424				Re	port Dat	te: October 3, 2	005	
Paramoto	Client Sample ID: Sample ID:				9527-00 1444810	02-010F 09	MDA	Proiect: Client ID: Vol. Recv.:	YANK YANK	01204 001	Time	Datab M
		Quanner		Oncertainty	I		MDA		Dr	AnalysiDate	Ime	Datch IVI
2	EPA 9	05.0 Modified	1									
3	EPA 9	06.0 Modified	1									
Surrogate/	Tracer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier/Tracer Recovery GFPC, Sr90, solid – 0.025 pCi					g	87		(25%-125%)				

Notes:

The Qualifiers in this report are defined as follows :

****** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.
- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample
- h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	t Yankee A eck Plant follow Road on, Connec ollenbeck 02332	tomic Power d :ticut 06424			Report Date: October 3, 2005						
	Client Sam Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: pate:		9527-0002-011F 144481010 TS 23-AUG-05 01-SEP-05 Client 10.6%			Proiect: Client ID: Vol. Recv.:					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Rad Gamma Spec Anal	ysis											
Gamma,Solid-FSS GA	M & ALL FSS	5										
Actinium-228		1.07	+/0.167	0.0586	+/-0.164	0.124	pCi/g		MJH1 09/30/0	5 0114	459542 1	
Americium-241	U	0.0066	+/0.134	0.0992	+/-0.131	0.204	pCi/g					
Bismuth-212		0.953	+/-0.359	0.116	+/-0.352	0.245	pCi/g					
Bismuth-214		1.11	+/0.109	0.0311	+/-0.107	0.0651	pCi/g					
Cesium-134	UUI	0.00	+/-0.0357	0.0228	+/-0.035	0.0476	pCi/g					
Cesium-137		0.717	+/-0.0496	0.0157	+/-0.0486	0.0329	pC1/g					
Cobalt-60	U	0.0299	+/-0.0397	0.0154	+/-0.0389	0.0332	pCi/g					
Europium-152	U	0.0131	+/-0.0604	0.0461	+/0.0592	0.0956	pCi/g					
Europium-154	U	-0.00/72	+/-0.0649	0.0516	+/0.0636	0.110	pCi/g					
Europium-155	U	0.0893	+/0.0903	0.0348	+/-0.0944	0.113	pCl/g					
		1.34	T/-U.U/48	0.02/8	+/-0.0733	0.0374	pCl/g					
		-0.0166	$\pm 7 = 0.103$	0.0331	+/-0.101	0.0727	pCl/g					
Nichium_04	U	0.0133	+/0.0223	0.0179	+/-0.0218	0.0370	pCl/g					
Potassium-40	U	12.00	+/-0.018/	0.0133	+/-0.780	0.0321	pCi/g					
Radium-226		1 11	+/-0 109	0.0311	+/-0 107	0.0651	pCi/g					
Silver-108m	U	0.0117	+/-0.0206	0.016	+/-0.0202	0.0332	pCi/g					
Thallium-208	Ŭ	0.394	+/0.0539	0.0164	+/-0.0528	0.0344	nCi/g					
Rad Gas Flow Proportion	onal Counting	B	•••••				F0					
GFPC Sr90 solid - 0	025 nCi/o	-										
Strontium-90	II.	0.00917	+/0.00651	0.0051 -	+/-0.00652	0.0106	nCi/g		EXW109/25/04	2335	464187 2	
Rad Liquid Scintillation	Analysis	0.00717		0.0001		0.0100	P016		201111100020000			
ISC Tritium Diet Cali	d-HTD? ALL	FSS										
Tritium	<i>a 1111/2,7111</i> TT	1.00	+/-3 02	3 17	+/2 02	6 54	nCi/a		MYP1 00/30/04	\$ 2051	468040 2	
LINUM	U	3.03	17 3.73	J.12	17 3.73	0.34	heaß		WIAT I \$7/JU/9.	- 40JL	100077 3	

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653

Method	Description
1	EML HASL 300, 4.5.2.3

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Certificate of Analysis

	Company : Address : Contact:	Connecticut Haddam Nec 362 Injun He East Hampto Mr. Pete Ho	Yankee A ck Plant ollow Roa on, Conne llenbeck	tomic Power d cticut 06424				Re	port Da	te: October 3, 2	005			
	Project: Soils PO# 002332 Client Sample ID: Sample ID:					02-011F		Project:	Project: VANK01204					
Sample ID:					1444810	10								
Parame	eter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M		
2	EPA 9	05.0 Modifie	d											
3	EPA 9	06.0 Modifie	đ											
4	EPA 9	06.0 Modifie	d											
Surrogat	e/Tracer recov	ery Test				Recovery%	Ac	ceptable Limits						
Carrier/Tra	acer Recovery	GFPG	C, Sr90, so	olid – 0.025 pCi	/g	58		(25%-125%)						

Notes:

2 3 4

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

Target analyte was detected in the sample as well as the associated blank. В

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

The 2:1 depletion requirement was not met for this sample d

Sample preparation or preservation holding time exceeded. h

Certificate of Analysis

Contact: Project:	East Hampt Mr. Pete Ho Soils PO# 0	on, Connec ollenbeck 02332	1 sticut 06424				R	Report Date: October 3, 2005					
	Client San Sample II Matrix: Collect Da Receive D Collector: Moisture:	Client Sample ID: Sample ID: Matrix: Collect Date: Receive Date: Collector: Moisture:			9527-0002-011FS 144481011 TS 23-AUG-05 01-SEP-05 Client 10.4%			YANK01204 YANK001 :					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M		
Rad Gamma Spec Ana	lysis												
Gamma,Solid-FSS G	AM & ALL FSS	5											
Actinium-228		1.15	+/0.258	0.0764	+/0.253	0.163	pCi/g		MJH1 09/30/05	5 0117 -	459542 1		
Americium-241	U	0.0781	+/-0.146	0.0856	+/0.143	0.176	pCi/g						
Bismuth-212		1.03	+/-0.432	0.170	+/0.423	0.359	pCi/g						
Bismuth-214		1.19	+/0.158	0.034	+/0.155	0.0721	pCi/g						
Cesium-134	UUI	0.00	+/-0.0493	0.026	+/-0.0483	0.0549	pCi/g						
Cesium-137		0.581	+/-0.0792	0.0224	+/0.0776	0.0471	pCi/g						
Cobalt-60	U	0.015	+/-0.0265	0.0229	+/-0.026	0.0497	pCi/g						
Europium-152	Ŭ	-0.00663	+/-0.0691	0.0566	+/-0.0677	0.118	pCi/g						
Europium-154	U	-0.0551	+/-0.0879	0.0677	+/-0.0861	0.146	pCi/g						
Europium-155	Ŭ	0.0749	+/-0.0932	0.058	+/-0.0913	0.119	pCi/g						
Lead-212		1.14	+/-0.125	0.031	+/-0.122	0.064	pCi/g						
Lead-214		1.25	+/0.172	0.0391	+/-0.168	0.0814	pCi/g						
Manganese-54	U	0.0076	+/-0.0265	0.0219	+/-0.0259	0.0466	pCi/g						
Niobium-94	U	0.0159	+/-0.0235	0.0202	+/-0.0231	0.0425	pCi/g						
Potassium-40		10.0	+/-1.10	0.194	+/-1.08	0.426	pCl/g						
Kadium-220		1.19	+/-0.158	0.034	+/-0.155	0.0721	pCvg						
Silver-IU8m	U	0.0103	+/0.024	0.0199	+/-0.0233	0.0413	pCl/g						
Inamum-208	teral Countin	- 0.383	+/−0.00 4	0.0225	+/-0.0027	0.0472	pcvg						
Kad Gas Flow Proport	ional Counting	S											
GFPC, Sr90, solid –	0.025 pCi/g												
Strontium-90	U	0.00615	+/0.00652	0.00522	+/0.00652	0.0109	pCi/g		EXW109/25/05	5 2335	464187 2		
Rad Liquid Scintillatio	on Analysis												
LSC, Tritium Dist, So	lid-HTD2,ALL	FSS											
Tritium	U	1.06	+/-3.71	3.06	+/3.71	6.41	pCi/g		MXP1 09/30/05	5 2124 4	468049 3		

The following Prep Methods were performed												
Method	Description	Analyst	Date	Time	Prep Batch							
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654							
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	ВЛ	09/06/05	0751	459653							
The following A	Analytical Methods were performed											
Method	Description											
				······································								

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Certificate of Analysis

	Company :	Connecticut	Yankee A	tomic Power								
	Address :	Haddam Ne	ck Plant									
		362 Injun H	ollow Roa	d								
		East Hampto	on, Conne	cticut 06424				Re	port Dat	e: October 3, 2	2005	
	Contact:	Mr. Pete Ho	llenbeck									
	Project:	Soils PO# 0	02332									
		Client San Sample ID	nple ID: :		9527-00 1444810	02–011FS 11		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Paramete	r	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
1	EML	HASL 300, 4.	.5.2.3									
2	EPA 9	05.0 Modifie	d									
3	EPA 9	06.0 Modifie	d									
4	EPA 9	06.0 Modifie	d									
Surrogate/1	Fracer recov	ery Test				Recovery%	Ac	ceptable Limits	i			
Carrier/Trace	r Recovery	GFP	C, Sr90, so	olid - 0.025 pCi/	g	56		(25%-125%)				
Notes:												

The Qualifiers in this report are defined as follows :

- ** Indicates the analyte is a surrogate compound.
- B Target analyte was detected in the sample as well as the associated blank.
- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.

- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- The 2:1 depletion requirement was not met for this sample d
- Sample preparation or preservation holding time exceeded. h
- The above sample is reported on a dry weight basis.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticu Haddam Ne 362 Injun F East Hamp Mr. Pete He Soils PO# (t Yankee A eck Plant follow Road ton, Connec ollenbeck 002332	tomic Power d cticut 06424			Report Date: October 3, 2005						
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	mple ID: D: ate: Date:		9527-00 1444810 TS 23-AU 01-SEF Client 8.69%	002-013F 012 G-05 2-05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001			
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Rad Gamma Spec Analy	ysis	~										
Gamma,Solid-FSS GA	M & ALL FS	5 0.00	1/ 0.007	0.154	1/ 0.201	0 220	-0:/-		MITTI 00/20/0	5 0101	450549 1	
Actinium-228	001	0.00	+/-0.28/	0.154	+/-0.281	0.320	pCVg		MJHT 09/30/03	5 0121	439342 1	
Americium-241 Diamuth 212	U	0.0304	T/-0.0428	0.03/3	+/0.0419	0.0703	pCl/g					
Dismuth-212	001	0.00	+/-0.370	0.217	+/-0.339	0.450	pCl/g					
Cesium-134	T	0.710	+/0.131	0.032	+/0.146	0.109	pCug pCi/a					
Cesium-137	U	0.0540	+/0.0876	0.0558	+/-0.0859	0.0703	nCi/g					
Cobalt-60	U	0.0496	+/-0.0429	0.0345	+/-0.042	0.0732	nCi/g					
Europium-152	Ŭ	-0.0133	+/0.0831	0.0685	+/-0.0815	0.142	nCi/g					
Europium-154	Ŭ	-0.0145	+/-0.0982	0.0803	+/0.0963	0.172	pCi/g					
Europium-155	Ū	0.0229	+/-0.0708	0.0595	+/-0.0694	0.122	pCi/g					
Lead-212	-	0.555	+/-0.0875	0.0362	+/0.0857	0.0748	pCi/g					
Lead-214		0.675	+/0.147	0.047	+/0.144	0.0978	pCi/g					
Manganese-54	U	0.0152	+/-0.0355	0.030	+/-0.0348	0.0631	pCi/g					
Niobium-94	U	0.000304	+/-0.032	0.0267	+/-0.0314	0.0558	pCi/g					
Potassium-40		10.9	+/-1.25	0.245	+/-1.23	0.533	pCi/g					
Radium-226		0.710	+/0.151	0.052	+/-0.148	0.109	pCi/g					
Silver-108m	U	0.00671	+/0.0293	0.0243	+/-0.0288	0.0506	pCi/g					
Thallium-208		0.224	+/0.087	0.0253	+/-0.0853	0.0532	pCi/g					
Rad Gas Flow Proportio	onal Countin	g										
GFPC, Sr90, solid - 0.	025 pCi/g											
Strontium-90		0.0554	+/-0.0125	0.00623	+/0.0126	0.014	pCi/g		EXW109/30/0	5 1131	464187 2	
Rad Liquid Scintillation	Analysis											
LSC, Tritium Dist. Solid	I-HTD2.ALL	FSS										
Tritium	Ŭ	-4.73	+/3.29	2.99	+/3.29	6.27	pCi/g		MXP1 09/30/0	5 2157	468049 3	

The following Prep Methods were performed												
Description	Analyst	Date	Time	Prep Batch								
Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654								
Dry Soil Prep GL-RAD-A-021	BJI	09/06/05	0751	459653								
nalytical Methods were performed												
Description												
	Prep Methods were performed Description Ash Soil Prep, GL–RAD–A–021B Dry Soil Prep GL–RAD–A–021 Analytical Methods were performed Description	Prep Methods were performed Analyst Description Analyst Ash Soil Prep, GL–RAD–A–021B PD Dry Soil Prep GL–RAD–A–021 B J1 .nalytical Methods were performed Description	Prep Methods were performed Date Description Analyst Date Ash Soil Prep, GL-RAD-A-021B PD 09/06/05 Dry Soil Prep GL-RAD-A-021 B J1 09/06/05 analytical Methods were performed 09/06/05 Description Description	Prep Methods were performed Date Time Description Analyst Date Time Ash Soil Prep, GL-RAD-A-021B PD 09/06/05 0914 Dry Soil Prep GL-RAD-A-021 B J1 09/06/05 0751 analytical Methods were performed Description Description Description	Prep Methods were performed Date Time Prep Batch Description Analyst Date Time Prep Batch Ash Soil Prep, GL–RAD–A–021B PD 09/06/05 0914 459654 Dry Soil Prep GL–RAD–A–021 B J1 09/06/05 0751 459653 analytical Methods were performed Description End End End							

1 EML HASL 300, 4.5.2.3

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Certificate of Analysis

C A C P	Company : Address : Contact: Project:	Connecticut Haddam Nec 362 Injun Ho East Hampto Mr. Pete Hol Soils PO# 00	Yankee A k Plant bliow Roa n, Connee lenbeck 2332	tomic Power d cticut 06424				Rej	port Da	te: October 3, 2	005		
	Client Sample ID: Sample ID:					02–013F 12		Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Parameter		Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
2	EPA 9	05.0 Modified	1										
3	EPA 9	06.0 Modified	I										
4	EPA 9	06.0 Modified	l										
Surrogate/Tr	acer recov	ery Test				Recovery%	Ac	ceptable Limits					
Carrier/Tracer	Recovery	GFPC	C, Sr90, so	olid - 0.025 pCi/	g	67		(25%-125%)					

Notes:

2 3 4

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Target analyte was detected in the sample as well as the associated blank. B

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.H Analytical holding time exceeded.

J Indicates an estimated value.U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details. Х

The 2:1 depletion requirement was not met for this sample d

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticu Haddam Ne 362 Injun H East Hampi Mr. Pete He Soils PO# 0	t Yankee A eck Plant Iollow Road ton, Connec ollenbeck 002332	tomic Power 1 sticut 06424				J	Report Date: October 3, 2005						
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID: D: ate: Date:		9527-0002-014F 144481013 TS 23-AUG-05 01-SEP-05 Client 9.85%			Project: Client ID: Vol. Recv.:	YANK YANK	01204 001					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M			
Rad Gamma Spec Analy	sis	~												
Gamma,Solid-FSS GA	M & ALL FS	S					C ''				150510 1			
Actinium-228		1.01	+/-0.285	0.077	+/-0.279	0.169	pCi/g		MJH1 09/30/0:	» 0713	459542 1			
Americium-241	U	0.00945	+/-0.0331	0.0271	+/-0.0324	0.0561	pCi/g							
Bismuth-212		0.777	+/-0.429	0.188	+/-0.420	0.406	pCi/g							
Bismuth-214		0.994	+/-0.151	0.0392	+/0.148	0.0844	pCi/g							
Cesium-134	U	0.0451	+/-0.0665	0.0314	+/-0.0652	0.0671	pCi/g							
Cesium-137		0.568	+/-0.0925	0.0232	+/-0.0907	0.0499	pCi/g							
Cobalt-60	U	0.0262	+/-0.0351	0.0259	+/~0.0344	0.0576	pCi/g							
Europium-152	U	0.0279	+/-0.0682	0.0559	+/-0.0668	0.118	pCi/g							
Europium-154	U	0.0439	+/-0.0932	0.0796	+/-0.0913	0.175	pCi/g							
Europium-155	U	0.0207	+/0.0585	0.0403	+/-0.05/3	0.0908	pC1/g							
		0.808	+/-0.121	0.0328	+/-0.119	0.0685	pCl/g							
Lead-214		0.971	+/-0.14/	0.0408	+/-0.144	0.0803	pCl/g							
Manganese-54	U	0.000574	+/-0.0362	0.0200	+/-0.0355	0.0010	pCl/g							
Nioblum-94	U	0.0124	+/-0.0240	0.0208	+/0.0241	0.0448	pCl/g							
Potassium-40 Dedium-226		0.004	+/-1.30	0.229	+/-1.28	0.517	pCi/g							
Silver-108m	TI	0.934	+/-0.131	0.0392	+/-0.148	0.0644	pCl/g							
511VCI-106111 Thallium_208	0	0.00130	+/-0.024/	0.0200	+/-0.0242	0.0441	pCi/g							
Ded Cee Flow Propertie	nel Countin	0.237	+/~0.0700	0.0245	+/- 0.0092	0.0322	peng							
Rad Gas Flow Froportio	anai Countin;	6												
GFPC, Sr90, solid - 0.0	025 pCi/g						 .							
Strontium-90		0.0105	+/-0.00606	0.00469	+/-0.00607	0.00975	pCi/g		EXW109/25/05	j 2335 ·	464187 2			
Rad Liquid Scintillation	Analysis													
LSC, Tritium Dist, Solia	l-HTD2,ALL	FSS												
Tritium	U	2.74	+/-5.08	4.13	+/5.08	8.66	pCi/g		MXP1 09/30/05	i 2230 -	468049 3			

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653

Method	Description
1	EML HASL 300, 4.5.2.3

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Certificate of Analysis

	Company :	Connecticut Y	Yankee A	tomic Power								
	Address :	Haddam Nec	k Plant									
		362 Injun Ho	llow Roa	đ								
		East Hampton	n, Conne	cticut 06424				Re	ort Dat	te: October 3, 2	.005	
	Contact:	Mr. Pete Hol	lenbeck					-		-		
	Project:	Soils PO# 00	2332									
		Client Sam Sample ID:	ple ID:		9527-00 1444810	02-014F 013		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Para	meter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modified										
3	EPA 9	06.0 Modified	l									
4	EPA 9	06.0 Modified	l									
Surrog	ate/Tracer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier/	Tracer Recovery	GFPC	C, Sr90, so	olid - 0.025 pCi	/g	66		(25%-125%)				

Notes:

2 3 4

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.H Analytical holding time exceeded.

- J Indicates an estimated value.U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details. Х
- The 2:1 depletion requirement was not met for this sample d

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	t Yankee A teck Plant follow Road on, Connec ollenbeck 102332	tomic Power 1 ticut 06424				F	leport Dat	ie: October 3, 2	005	
	Client San Sample ID Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: ate:		9527-00 1444810 TS 23-AU(01-SEP Client 2.99%	002015F 014 G05 05		Project: Client ID: Vol. Recv.:	YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	/ si s	_									
Gamma, Solid-FSS GA	M & ALL FSS	S 									
Actinium-228		0.978	+/-0.147	0.0488	+/-0.144	0.104	pCi/g		MJH1 09/30/03	5 0714 ·	459542 1
Americium-241	U	-0.00452	+/-0.116	0.0918	+/-0.114	0.189	pCi/g				
Bismuth 214		0.393	+/-0.218	0.123	+/0.213	0.260	pCi/g				
Bismuth=214 Cosium=124		0.797	+/-0.0790	0.0280	+/-0.078	0.060	pCl/g				
Cesium-137	U	0.0528	+/0.0234	0.0193	+/-0.0223 +/-0.042	0.0403	pCi/g				
Cobalt-60	F T	0.110	+/0 0246	0.0131	+/0.042	0.0519	pCi/g				
Europium-152	U U	0.0221	+/-0.0451	0.0100	+/-0.0442	0.029	pCi/g				
Europium-152	U U	-0.00825	+/-0.0524	0.0421	+/-0.0514	0.0908	pCi/g				
Europium-155	Ŭ	0.0576	+/-0.0658	0.0497	+/-0.0645	0.103	pCi/g				
Lead-212	Ũ	0.989	+/-0.0631	0.024	+/-0.0618	0.0497	pCi/g				
Lead-214		0.981	+/0.0877	0.0295	+/-0.0859	0.0615	pCi/g				
Manganese-54	U	0.0126	+/-0.0212	0.0167	+/-0.0208	0.0352	pCi/g				
Niobium-94	Ŭ	-0.00587	+/0.0168	0.0135	+/-0.0164	0.0284	pCi/g				
Potassium-40		11.8	+/0.743	0.131	+/0.728	0.287	pCi/g				
Radium-226		0.797	+/-0.0796	0.0286	+/-0.078	0.060	pCi/g				
Silver-108m	U	0.0076	+/0.0148	0.0133	+/-0.0146	0.0278	pCi/g				
Thallium-208		0.266	+/-0.0459	0.0143	+/0.045	0.0302	pCi/g				
Rad Gas Flow Proportio	nal Counting	S									
GFPC, Sr90, solid - 0.0	025 pCi/g										
Strontium-90	Ū	0.00372	+/-0.00546	0.00443	+/0.00546	0.00924	pCi/g		EXW109/25/0	5 2335 (464187 2
Rad Liquid Scintillation	Analysis										
LSC, Tritium Dist, Solid	I-HTD2,ALL	FSS									
Tritium	U	4.13	+/-3.91	3.09	+/-3.91	6.47	pCi/g		MXP1 09/30/05	i 2303 4	468049 3

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B JI	09/06/05	0751	459653

Method	Jescription
1	EML HASL 300, 4.5.2.3

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Certificate of Analysis

	Company : Address : Contact: Project:	Connecti Haddam 362 Injur East Han Mr. Pete Soils PO	cut Yankee Neck Plant Hollow Ro pton, Conn Hollenbeck # 002332	Atomic Power Dad ecticut 06424				R	eport Dat	te: October 3, 2	005	
		Client S Sample	ample ID: ID:		952700 1444810	02–015F 14		Project: Client ID; Vol. Recv.:	YANK YANK	01204 001		
Parameter	r	Qualific	r Resul	t Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Mod	fied								-	
3	EPA 9	06.0 Mod	fied									
4	EPA 9	06.0 Mod	fied									
Surrogate/T	racer recov	ery T	est			Recovery%	Ac	ceptable Limit	3			
Carrier/Traces	r Recovery	G	FPC, Sr90,	solid – 0.025 pCi	/g	67		(25%-125%)				
Notes:												

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

Target analyte was detected in the sample as well as the associated blank. B

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
 H Analytical holding time exceeded.
- J Indicates an estimated value.

2 3 4

- U Target analyte was analyzed tot out not determined UI Uncertain identification for gamma spectroscopy. Target analyte was analyzed for but not detected above the MDL or LOD.
- Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.

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Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0	t Yankee A eck Plant follow Road on, Connec ollenbeck 002332	tomic Power d :ticut 06424				F	teport Da	te: October 3, 2	005	
	Client Sam Sample III Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: ate:		9527-00 1444810 TS 23-AU0 01-SEP Client 12.7%	002-016F 015 G-05 05		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	/sis										
Gamma,Solid-FSS GA	M & ALL FSS	5									
Actinium-228		1.01	+/-0.258	0.0824	+/-0.252	0.181	pCi/g		MJH1 09/30/0	5 0829	459542 1
Americium-241	U	-0.0704	+/0.126	0.0932	+/-0.123	0.194	pCi/g				
Bismuth-212		1.24	+/0.709	0.189	+/-0.695	0.410	pCi/g				
Bismuth-214		1.23	+/0.152	0.0545	+/0.149	0.116	pCi/g				
Cesium-134	U	0.0251	+/-0.036	0.0307	+/-0.0353	0.0663	pCi/g				
Cesium-137		0.764	+/0.0979	0.0258	+/0.0959	0.0555	pCi/g				
Cobalt-60	U	0.0177	+/-0.0364	0.0313	+/-0.0357	0.0691	pCi/g				
Europium-152	U	0.0115	+/-0.0844	0.0666	+/0.0827	0.141	pCi/g				
Europium-154	U	0.0216	+/-0.0932	0.0729	+/-0.0914	0.163	pCi/g				
Europium-155	U	0.018	+/0.0846	0.071	+/0.0829	0.147	pCi/g				
Lead-212		0.999	+/-0.0981	0.0385	+/-0.0961	0.0807	pCi/g				
Lead-214		1.23	+/0.165	0.0507	+/-0.162	0.107	pCi/g				
Manganese-54	U	0.0246	+/0.0369	0.0311	+/0.0362	0.0669	pCi/g				
Niobium-94	U	-0.0133	+/0.0289	0.0221	+/0.0283	0.0477	pCi/g				
Potassium-40		10.9	+/1.20	0.231	+/-1.18	0.527	pCi/g				
Radium-226		1.23	+/-0.152	0.0545	+/-0.149	0.116	pCi/g				
Silver-108m	U	0.00451	+/-0.0295	0.0246	+/0.0289	0.0522	pCi/g				
Thallium-208		0.293	+/-0.0733	0.0283	+/-0.0718	0.0605	pCi/g				
Rad Gas Flow Proportio	nal Counting	5									
GFPC, Sr90, solid – 0.0	025 pCi/g										
Strontium-90	• -	0.0164	+/-0.00543	0.00387 -	+/0.00544	0.0081	pCi/g		EXW109/25/0	5 2336	464187 2
Rad Liquid Scintillation	Analysis										
- LSC Tritium Dist Solid	- I-HTD2 ALL	FSS									
Tritium	U	-0.648	+/-3.63	3.08	+/-3.63	6.45	pCi/g		MXP1 09/30/0	5 2335	468049 3
Tritium	U	-0.648	+/-3.63	3.08	+/-3.63	6.45	pCi/g		MXP1 09/30/0	5 2335	46804

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653
The following A	Analytical Methods were performed				
Method	Description				

1 EML HASL 300, 4.5.2.3

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Certificate of Analysis

Company : Connecticut Yankee Atomic Powe Address : Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Contact: Mr. Pete Hollenbeck Project: Soils PO# 002332			tomic Power d cticut 06424				Re	port Dat	te: October 3, 2	:005		
	Project:	Soils PO# 00	2332									
		Client Sam Sample ID:	ple ID:		9527-00 1444810	02–016F 15		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Paramete	er	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modified	l									
3	EPA 9	06.0 Modified	l									
4	EPA 9	06.0 Modified	l									
Surrogate/	Tracer recov	ery Test				Recovery%	Ac	ceptable Limits	ł			
Carrier/Trac	er Recovery	GFPC	C, Sr90, so	olid - 0.025 pCi/	g	67		(25%-125%)				

Notes:

2 3 4

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

В Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

Х Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact: Project:	Connecticut Haddam Ne 362 Injun H East Hampto Mr. Pete Ho Soils PO# 0	Yankee A ck Plant ollow Road on, Connec ollenbeck 02332	tomic Power d ticut 06424				F	Report Dat	e: October 3, 2	005	
	Client San Sample ID Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: ate:		9527-00 1444810 TS 23-AU0 01-SEP Client 63.3%	002-017F 016 G-05 -05		Proiect: Client ID: Vol. Recv.:	YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Gamma Spec Analy	ysis	_									
Gamma,Solid-FSS GA	M & ALL FSS			0 0 6 4 0			~		1000000		
Actinium-228		1.04	+/-0.198	0.0648	+/-0.194	0.136	pCi/g		MJH1 09/25/0	5 2303	459542 1
Americium-241	U	0.0091	+/-0.103	0.119	+/-0.160	0.244	pCi/g				
Bismuth-212 Dismuth-214		0.730	+/-0.30/	0.100	+/-0.300	0.343	pCl/g				
Bismuin-214 Cesium-124	171	2.91	+/-0.108	0.0372	+/-0.105	0.0772	pCi/g				
Cesium-137	001	1 44	+/-0.0654	0.0251	+/-0.0641	0.0374	pCrg				
Cohelt-60	11	0.0148	+/0.0409	0.0173	+/-0.040	0.0374	nCi/g				
Europium-152	Ŭ	0.0654	+/-0.0939	0.0589	+/-0.0921	0.121	nCi/g				
Europium-154	Ŭ	0.00429	+/-0.0744	0.0508	+/-0.0729	0.108	pCi/g				
Europium-155	UUI	0.00	+/-0.119	0.0641	+/0.117	0.131	pCi/g				
Lead-212		1.37	+/-0.0883	0.0318	+/-0.0865	0.0652	pCi/g				
Lead-214		3.70	+/0.159	0.0426	+/0.155	0.0875	pCi/g				
Manganese-54	U	-0.0231	+/-0.0268	0.0208	+/-0.0263	0.0434	pCi/g				
Niobium-94	U	0.0062	+/-0.0243	0.0191	+/-0.0238	0.0395	pCi/g				
Potassium-40		7.74	+/0.776	0.183	+/-0.761	0.390	pCi/g				
Radium-226		2.91	+/-0.168	0.0372	+/0.165	0.0772	pCi/g				
Silver-108m	U	0.0198	+/-0.024	0.0197	+/-0.0235	0.0406	pCi/g				
Thallium-208		0.352	+/0.0606	0.020	+/0.0593	0.0414	pCi/g				
Rad Gas Flow Proportio	inal Counting	5									
GFPC, Sr90, solid – 0.	025 pCi/g										
Strontium-90		0.0962	+/-0.00797	0.00375+	+/-0.00849	0.00782	pCi/g		EXW109/25/0	5 2336	464187 2
Rad Liquid Scintillation	Analysis										
LSC, Tritium Dist, Solid	t–HTD2,ALL	FSS									
Tritium	U	3.93	+/3.83	3.03	+/-3.83	6.35	pCi/g		MXP1 10/01/03	5 0008	468049 3

Method	Description	Analyst	Date	Time	Prep Batch	
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654	
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B Ji	09/06/05	0751	459653	
The following A	analytical Methods were performed					
Method	Description			· · · · · ·	<u> </u>	

1 EML HASL 300, 4.5.2.3

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Certificate of Analysis

	Company : Address : Contact:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soile PO# 0	t Yankee A ck Plant follow Roa on, Connec ollenbeck	tomic Power d cticut 06424				Rej	port Da	te: October 3, 2	005	
Client Sample ID: Sample ID:				9527-00 1444810	02–017F 16		Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Param	eter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modifie	:d									
3	EPA 9	06.0 Modifie	d									
4	EPA 9	06.0 Modifie	xd									
Surrogat	e/Tracer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier/Tracer Recovery GFPC, Sr90, solid – 0.025 pCi/g					/g	57		(25%-125%)				

Notes:

2 3 4

The Qualifiers in this report are defined as follows :

Indicates the analyte is a surrogate compound. **

В Target analyte was detected in the sample as well as the associated blank.

- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

Sample preparation or preservation holding time exceeded. h

Certificate of Analysis

Company : Address : Contact: Project:	Connecticu Haddam Ne 362 Injun H East Hampt Mr. Pete Ho Soils PO# 0 Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	t Yankee A eck Plant Iollow Road ton, Connec Dollenbeck 002332 nple ID: D: ate: Date:	tomic Power d :ticut 06424	9527-00 1444810 TS 25-AU 01-SEP Client 10.4%		Project: Client ID: Vol. Recv.:	Report Date: October 3, 2005 Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Rad Gamma Spec Analy	ysis											
Gamma,Solid-FSS GA	M & ALL FSS	5										
Actinium-228		0.964	+/-0.247	0.0656	+/-0.242	0.141	pCi/g		MJH1 09/30/0	5 0830 ·	459542 1	
Americium-241	U	0.0832	+/0.141	0.117	+/-0.138	0.241	pCi/g					
Bismuth-212		0.730	+/-0.316	0.140	+/-0.310	0.299	pCi/g					
Bismuth-214		1.24	+/0.171	0.0364	+/-0.168	0.0768	pCi/g					
Cesium-134	UUI	0.00	+/-0.0408	0.0254	+/-0.040	0.0537	pCi/g					
Cesium-137		0.922	+/0.0986	0.0219	+/-0.0967	0.046	pCi/g					
Cobalt-60	U	0.0376	+/-0.0317	0.0262	+/-0.031	0.0563	pCi/g					
Europium-152	U	0.031	+/-0.0669	0.0505	+/-0.0656	0.105	pCi/g					
Europium-154	U	-0.0447	+/-0.0791	0.0604	+/-0.0775	0.131	pCi/g					
Europium-155	U	0.101	+/-0.0779	0.0587	+/-0.0763	0.121	pCi/g					
		1.04	+/-0.126	0.0306	+/-0.124	0.0632	pCi/g					
Lead-214		1.30	+/-0.174	0.0358	+/-0.171	0.0749	pCl/g					
Manganese-54		0.00	+/0.0389	0.0156	+/-0.0381	0.034	pCi/g					
Niodium-94	U	0.00757	+/-0.0241	0.0196	+/-0.0236	0.0414	pCi/g					
Potassium-40		10.0	+/-1.25	0.219	+/-1.22	0.477	pCl/g					
Silver 108m		1.24	+/-0.1/1	0.0304	+/-0.108	0.0708	pCl/g					
Thellium-208	U	-0.00332	+/-0.0218	0.01//	+/-0.0214	0.0371	pCi/g					
Rad Gas Flow Proportio	anal Counting	0.300 0	+/-0.0004	0.019	+/-0.005	0.0403	peng					
		5										
GFPC, Sry0, sona – 0.0	025 pC1/g						<u> </u>					
Strontium-90		0.026	+/0.00952	0.00742	+/0.00955	0.0159	pCi/g		EXW109/28/0	→ 1221 4	464187 2	
Rad Liquid Scintillation	Analysis											
LSC, Tritium Dist, Solid	i–HTD2,ALL	FSS										
Tritium	U	0.417	+/-3.65	3.05	+/3.65	6.38	pCi/g		MXP1 10/01/0	5 00 41 4	468049 3	
The following Pren Me	thods were n	erformed										

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	В Л	09/06/05	0751	459653

1 EML HASL 300, 4.5.2.3

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Certificate of Analysis

Company : Connecticut Yankee Atomic Power Address : Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Contact: Mr. Pete Hollenbeck Project: Soils PO# 002332								Rej	port Dat	te: October 3, 2	005	
Client Sample ID: Sample ID:				9527-00 1444810	02019F 17	Project: YANK01204 Client ID: YANK001 Vol. Recv.:						
Parame	eter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
2	EPA 9	05.0 Modified	l									
3	EPA 9	06.0 Modified	l									
4	EPA 9	06.0 Modified	I									
Surrogate	Tracer recov	ery Test				Recovery%	Ac	ceptable Limits				
Carrier/Tra	Carrier/Tracer Recovery GFPC, Sr90, solid – 0.025 pCi/g				/g	65		(25%-125%)		·		

Notes:

The Qualifiers in this report are defined as follows :

- ** Indicates the analyte is a surrogate compound.
- B Target analyte was detected in the sample as well as the associated blank.
- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.
- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample
- h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho	t Yankee A eck Plant follow Roa on, Connec ollenbeck	tomic Power d cticut 06424				R	leport Dat	e: Oct	ober 3, 20	05	
Project:	Soils PO# 0	02332										
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: bate:		9527-0 1444810 TS 23-AU 01-SEF Client 14.7%	002004F 018 G05 205		Project: Client ID: Vol. Recv.:	YANKO YANKO	01204 001			
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	Analy	/stDate	Time	Batch M
Rad Alpha Spec Analys	is											
Alphaspec Am241, Cm,	Solid ALL FS	55										
Americium-241	U	-0.00392	+/0.0928	0.101	+/-0.0928	0.279	pCi/g		JAS1	09/26/05	1106	464478 1
Curium-242	U	0.0664	+/0.115	0.0742	+/0.115	0.236	pCi/g					
Curium-243/244	U	-0.0699	+/-0.130	0.167	+/0.131	0.410	pCi/g					
Alphaspec Pu, Solid–A	LL FSS											
Plutonium-238	U	0.0316	+/0.120	0.112	+/-0.120	0.300	pCi/g		JAS1	09/26/05	1106	464479 2
Plutonium-239/240	Ū	0.052	+/-0.118	0.0965	+/-0.118	0.270	pCi/g					
Liquid Scint Pu241, So	lid–ALL FSS											
Plutonium-241	U	-0.765	+/-13.0	11.0	+/-13.0	22.6	nCi/g		JAS1	09/26/05	1424	464480 3
Rad Gamma Spec Anal	vsis						F8					
Gamma Solid_ESS GA	, M & AII FSS	2										
Actinium-228	M & ALL FOO	, 1.22	+/0 272	0.075	+/0 267	0.158	nCi/a		міні	00/30/05	0831	A505A7 A
Americium-741	11	0.0663	+/0 142	0.075	+/-0139	0.158	pCirg pCirg		WIJIII	09/30/03	0051	-,,,,,,,,,
Bismuth-212	Ū	0.919	+/-0.401	0 187	+/-0 393	0.205	nCi/g					
Bismuth-214		1.34	+/0.181	0.0473	+/-0.177	0.0979	pCi/g					
Cesium-134	U	0.0461	+/-0.0371	0.0274	+/0.0364	0.0572	pCi/g					
Cesium-137	-	2.41	+/-0.238	0.0234	+/-0.233	0.0488	pCi/g					
Cobalt-60	U	0.0394	+/-0.0294	0.026	+/-0.0289	0.0553	pCi/g					
Europium-152	Ŭ	0.0321	+/-0.097	0.0689	+/0.095	0.142	pCi/g					
Europium-154	U	-0.0125	+/-0.085	0.0672	+/0.0833	0.143	pCi/g					
Europium-155	U	0.116	+/0.108	0.0612	+/-0.106	0.125	pCi/g					
Lead-212		1.32	+/-0.161	0.0383	+/0.158	0.0784	pCi/g					
Lead-214		1.39	+/-0.181	0.0499	+/0.178	0.102	pCi/g					
Manganese-54	U	-0.0174	+/0.0297	0.0234	+/0.0291	0.0491	pCi/g					
Niobium-94	ប	0.0245	+/-0.0267	0.022	+/-0.0262	0.0458	pCi/g					
Potassium-40		10.7	+/-1.21	0.203	+/-1.18	0.438	pCi/g					
Radium-226		1.34	+/0.181	0.0473	+/-0.177	0.0979	pCi/g					
Silver-108m	U	0.0113	+/-0.0293	0.0238	+/-0.0287	0.049	pCi/g					
I nainum-208		0.433	+/-0.0831	0.0219	+/0.0815	0.0457	pCvg					
Kau Gas Flow Proportio	mai Counting	S										
GFPC, Sr90, solid - 0.	025 pCi/g											
Strontium-90		0.0364	+/-0.0107	0.00766	+/-0.0108	0.0165	pCi/g		EXW1	09/28/05	1221	464187 5
Rad Liquid Scintillation	Analysis											
LSC, Tritium Dist, Solid	d-HTD2,ALL	FSS										
Tritium	U	1.72	+/-3.77	3.08	+/-3.77	6.46	pCi/g		MXP1	10/01/05	0113	468049 6
Liquid Scint C14, Solid	All,FSS											

Certificate of Analysis

Contact:	362 Injun He East Hampto Mr. Pete Ho	ollow Roa on, Connec llenbeck	d cticut 06424			Report Date: October 3, 2005						
Project:	Soils PO# 0	02332										
	Client Sample ID: Sample ID:			9527-0002-004F 144481018			Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Rad Liquid Scintillation	n Analysis						···					
Liquid Scint C14, Solia	I All,FSS											
Carbon-14		0.296	+/0.129	0.103	+/0.129	0.210	pCi/g		SLN1 09/22/05	0930 /	462176 8	
Liquid Scint Fe55, Soli	d–ALL FSS											
Iron-55	U	-13.8	+/37.6	25.2	+/-37.6	51.3	pCi/g		BXF1 09/20/05	2121 -	462172 9	
Liquid Scint Ni63, Soli	d-ALL FSS											
Nickel-63	U	-3.72	+/9.67	8.29	+/ 9 .67	17.4	pCi/g		BXF1 09/20/05	1514 ·	462173 10	
Liquid Scint Tc99, Soli	d–ALL FSS											
Technetium-99		0.368	+/-0.154	0.121	+/-0.155	0.248	pCi/g		BXF1 09/19/05	1359 -	461642 11	

The following Prep Methods were performed

Company : Connecticut Yankee Atomic Power

Address : Haddam Neck Plant

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653

The following Analytical Methods were performed Method Description

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	EML HASL 300, 4.5.2.3
5	EPA 905.0 Modified
6	EPA 906.0 Modified
7	EPA 906.0 Modified
8	EPA EERF C-01 Modified
9	DOE RESL Fe-1, Modified
10	DOE RESL Ni-1, Modified
11	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits	
Americium-243	Alphaspec Am241, Cm, Solid ALL	82	(15%-125%)	
Plutonium-242	Alphaspec Pu, Solid-ALL FSS	91	(15%–125%)	
Carrier/Tracer Recovery	Liquid Scint Pu241, Solid-ALL FS	86	(25%-125%)	
Carrier/Tracer Recovery	GFPC, Sr90, solid - 0.025 pCi/g	56	(25%–125%)	
Carrier/Tracer Recovery	Liquid Scint Fe55, Solid-ALL FS	88	(15%-125%)	

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Certificate of Analysis

Company : Address :	ompany: Connecticut Yankee Atomic Power ddress: Haddam Neck Plant 362 Injun Hollow Road East Hampton, Connecticut 06424 Ma Data Hellowheel			F	Report Dat	te: October 3, 2	005					
Contact:	Mr. Pete Ho	llenbeck										
Project:	Soils PO# 00	02332										
	Client Sam Sample ID	ple ID: :		9527-000 14448101)2004F 18		Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Carrier/Tracer Recovery	Liqui	id Scint N	i63, Solid-ALL	FS	85		(25%-125%)					
Carrier/Tracer Recovery	Liqui	id Scint To	99, Solid-ALL	FS	86		(15%-125%)					

Notes:

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company :	Connecticu	t Yankee A	tomic Power								
Address :	Haddam Ne	ck Plant									
	362 Injun H	lollow Roa	d								
	East Hampt	on, Connec	cticut 06424				F	leport Date	: October 3, 20	05	
Contact:	Mr. Pete Ho	ollenbeck						-	·		
Project:	Soils PO# 0	02332									
	Client Sar Sample II Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: Pate:		9527-0002-009F 144481019 TS 23-AUG-05 01-SEP-05 Client 8.95%			Proiect: Client ID: Vol. Recv.:	YANKO YANKO	1204 01		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Alpha Spec Analys	is						· · · · · · · · · · · · · · · · · · ·				
Alphaspec Am241, Cm,	Solid ALL FS	55									
Americium-241	U	-0.00482	+/-0.073	0.0816	+/0.073	0.242	pCi/g		JAS1 09/26/05	1106	464478 1
Curium-242	U	0.0176	+/-0.0701	0.0546	+/0.0701	0.201	pCi/g				
Curium-243/244	U	0.0633	+/-0.151	0.134	+/0.151	0.347	pCi/g				
Alphaspec Py Solid-A	LLESS										
Plutonium-238	11	0 0699	+/0 078	0 126	+/0 0784	0 333	nCi/a		1451 00/26/05	1106	464470 2
Plutonium-239/240	1	-0.0627	+/0.0767	0.120	+/-0.077	0.333	pCi/g		7151 0 <i>7/20/05</i>	1100	1011/2
Liquid Saint Du 241 Sa	II.d ATT ESS	0.0027	.,	0.122	., 0.077	0.525	POLE				
Distonium_241		_16	+/-12.0	10.6	+/-12.2	21.0	-Cila		1481 00/06/06	1441	161100 2
Pad Commo Snos Anal	le	-15	+/-12.0	10.5	+/-12.2	21.0	peng		JASI 09/20/03	[44]	404400 3
Kau Gamma Spec Anar	yala	_									
Gamma,Solid-FSS GA	M & ALL FSS	5									
Actinium-228		0.861	+/-0.270	0.0839	+/-0.265	0.188	pCi/g		MJH1 09/30/05	0832	459542 4
Americium-241	U	0.0357	+/-0.0404	0.0342	+/-0.0396	0.0712	pCi/g				
Bismuth-212	U	0.299	+/-0.489	0.232	+/-0.480	0.502	pCi/g				
Bismuth-214		0.728	+/-0.157	0.0435	+/-0.154	0.095	pCi/g				
Cesium-134	U	0.00348	+/-0.0375	0.0312	+/-0.0367	0.0682	pCi/g				
Cesium-137		0.477	+/-0.0873	0.029	+/-0.0856	0.0627	pCi/g				
Cobalt-60	U	-0.00701	+/-0.0345	0.0279	+/-0.0338	0.0635	pCi/g				
Europium-152	U	0.0373	+/-0.0753	0.0638	+/-0.0738	0.136	pCi/g				
Europium-154	0	0.099	+/0.0913	0.0857	+/0.0895	0.192	pCVg				
Europium-155	U	0.04/	+/-0.0002	0.0344	+/-0.0049	0.114	pCi/g				
Lead-214		0.534	+/-0.0901	0.032	+/-0 142	0.0077	pCl/g				
LCBUTZ14 Mongonoso_\$4		0.014	T/TU.140	0.0405	+/-0.143	0.099	pCl/g				
Niahium-04	U U	-0.00341	+/0.0307	0.0307	+/-0.030	0.0008	pCi/g				
Potossium-40	0	11 5	+/-U.U262 +/-1 AA	0.0231	+/-0.0270	0.0505	pCi/g				
Radium-226		0 728	+/0157	0.219	+/-0 154	0.510	pCi/g				
Silver-108m	T	0.720	+/-0.0204	0.0433	+/0.0288	0.053	pCi/g				
Thallium-208	U	0 133	+/-0.0294	0.0235	+/0.0596	0.0512					
Rad Gas Flow Proportio	anal Counting	v.155	1 0.0006	0.0270		0.0037	perg				
CEDC S-00	025 - Ci/-	5									
OFFC, STYU, SOLIA - U.	025 pCVg	0.0167	1/-0.0001	0.00460	. / . 0 0001 1	0.0142	-0:1-		EVWI 00/08/05	1001	ACA107 F
	A	0.010/	±1-0.0081	0.00028-		0.0142	pcvg	1	CAWI09/28/03	1221	40410/ 2
Rau Liquia Scintillation	Analysis										
LSC, Tritium Dist, Solid	a-HTD2,ALL	422.									
Tritium	U	1.94	+/3.77	3.07	+/-3.77	6.44	pCi/g]	MXP1 10/01/05	0146	468049 6
Liquid Scint C14, Solid	All,FSS										

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Certificate of Analysis

Contact: Project:	362 Injun He East Hampto Mr. Pete Ho Soils PO# 00	ollow Road on, Connec llenbeck 02332	d :ticut 06424				R	leport Da	te: October 3, 20	105	
	Client Sam Sample ID	iple ID: :		95270002009F 144481019			Client ID: YANK01204 Vol. Recv.:				
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Liquid Scintillation	n Analysis					·····	·····				
Liquid Scint C14, Solid	All,FSS										
Carbon-14		0.287	+/-0.102	0.0851	+/-0.102	0.173	pCi/g		SLN1 09/16/05	1032	462176 8
Liquid Scint Fe55, Soli	d–ALL FSS										
Iron-55	U	-30.3	+/-38.7	26.2	+/38.7	53.1	pCi/g		BXF1 09/20/05	220 8 /	462172 9
Liquid Scint Ni63, Solid	d-ALL FSS										
Nickel-63	U	-5.55	+/-9.77	8.46	+/- 9 .77	17.7	pCi/g		BXF1 09/20/05	1531	462173 10
Liquid Scint Tc99, Solid	d–ALL FSS										
Technetium-99		0.325	+/0.158	0.125	+/0.158	0.255	pCi/g		BXF1 09/19/05	1431	461642 11

The following Prep Methods were performed

Company: Connecticut Yankee Atomic Power

Address : Haddam Neck Plant

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B J1	09/06/05	0751	459653

The following Analytical Methods were performed Method Description

tatemon	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	EML HASL 300, 4.5.2.3
5	EPA 905.0 Modified
6	EPA 906.0 Modified
7	EPA 906.0 Modified
8	EPA EERF C-01 Modified
9	DOE RESL Fe-1, Modified
10	DOE RESL Ni-1, Modified
11	DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits	
Americium-243	Alphaspec Am241, Cm, Solid ALL	82	(15%-125%)	
Plutonium-242	Alphaspec Pu, Solid-ALL FSS	82	(15%-125%)	
Carrier/Tracer Recovery	Liquid Scint Pu241, Solid-ALL FS	90	(25%-125%)	
Carrier/Tracer Recovery	GFPC, Sr90, solid – 0.025 pCi/g	62	(25%-125%)	
Carrier/Tracer Recovery	Liquid Scint Fe55, Solid-ALL FS	88	(15%-125%)	

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Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Nec 362 Injun He East Hampto Mr. Pete Ho	Yankee A ck Plant ollow Roa on, Connec llenbeck	tomic Power d cticut 06424				F	eport Dat	e: October 3, 2	:005	
Project:	Soils PO# 00	02332									
	Client Sam Sample ID	iple ID: :		9527-000 14448101	02-009F 19		Project: Client ID: Vol. Recv.:	YANK YANK	01204 001		
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Carrier/Tracer Recovery	Liqui	id Scint Ni	i63, Solid-ALL	FS	84		(25%-125%)				
Carrier/Tracer Recovery	Liqui	id Scint To	99, Solid-ALL	FS	84		(15%-125%)				

Notes:

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.

Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Ne 362 Injun H East Hampt Mr. Pete Ho	t Yankee A ock Plant ollow Road on, Connec ollenbeck	tomic Power d cticut 06424				R	eport Date	: Octobe	r 3, 20	05	
Project:	Soils PO# 0	02332										
	Client San Sample ID Matrix: Collect Da Receive D Collector: Moisture:	nple ID:): ate: ate:		9527-0002-012F 144481020 TS 23-AUG-05 01-SEP-05 Client 8.59%			Project: Client ID: Vol. Recv.:	YANK01204): YANK001 ;v.:				
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystD	ate	Time	Batch M
Rad Alpha Spec Analys	is											
Alphaspec Am241, Cm,	Solid ALL FS	S										
Americium-241	U	0.0731	+/-0.144	0.113	+/-0.144	0.317	pCi/g		JAS1 09/	26/05	1106	464478 1
Curium-242	Ŭ	-0.0369	+/-0.0835	0.0875	+/-0.0835	0.279	pCi/g					
Curium-243/244	U	-0.101	+/0.117	0.174	+/0.118	0.437	pCi/g					
Alphaspec Pu. Solid-A	LL FSS											
Plutonium-238	U	0.0311	+/0.0877	0.0683	+/-0.0877	0.218	pCi/g		JAS1 09/	27/05	1403	464479 2
Plutonium-239/240	Ū	0.192	+/0.193	0.132	+/0.194	0.345	pCi/g					
Liquid Scint Pu241, So	lid–ALL FSS											
Plutonium-241	U	-5.58	+/-13.4	11.4	+/-13.4	23.6	pCi/g		JAS1 09/	26/05	1458	464480 3
Rad Gamma Spec Anal	vsis				,		F0					
Commo Solid_ESS CA	, 	2										
Antinium-228		0.00	+/-0 245	0 203	+/0 240	0 4 2 6	•Ci/a		MTH1 00/	30/05	0835	4505A7 A
Acumum-226 Americium-241		0.00	+/-0 139	0.203	+/0 136	0.420	pCl/g			30/03	0055	- 27///
Rismuth-212	U	0.0110	+/-0 503	0.102	+/-0.493	0.469	nCi/g					
Bismuth-214		0.576	+/-0.136	0.0514	+/-0.133	0.111	pCi/g					
Cesium-134	U	0.0399	+/0.036	0.0327	+/-0.0353	0.0712	pCi/g					
Cesium-137	-	0.646	+/-0.104	0.0281	+/-0.102	0.0609	pCi/g					
Cobalt-60	U	0.0185	+/0.0453	0.0386	+/-0.0444	0.0851	pCi/g					
Europium-152	U	-0.0149	+/-0.0919	0.0731	+/-0.090	0.155	pCi/g					
Europium-154	U	-0.00285	+/0.113	0.0781	+/-0.110	0.178	pCi/g					
Europium-155	U	0.0332	+/0.0866	0.0704	+/0.0848	0.147	pCi/g					
Lead-212		0.646	+/0.106	0.0421	+/-0.103	0.0882	pCi/g					
Lead-214		0.652	+/-0.168	0.0533	+/-0.165	0.113	pCi/g					
Manganese-54	U	0.0104	+/-0.0392	0.0324	+/-0.0385	0.0702	pCi/g					
Niobium-94	U	0.0179	+/-0.0319	0.0273	+/-0.0312	0.0588	pCi/g					
Potassium-40		9.44	+/-1.55	0.330	+/-1.51	0.739	pCi/g					
Kadium-220 Silwa 108m		0.576	+/-0.130	0.0214	+/0.133	0.111	pCl/g					
Sliver-108m	U	0.0217	+/-0.0313	0.0204	+/-0.0308	0.0303	pCi/g					
Pad Cas Flow Proportie	anel Counting	0.279		0.0238	+/-0.0731	0.050	peng					
Rau Gas Flow Hoporta		6										
GFPC, Sr90, solid - 0.	uzs pCi/g	A A · · · -		0.00484		0 0000			EVIII AA		9901	ACA107 6
Strontium-90		0.0107	+/-0.005	0.00373	+/-0.005	0.0078	pC1/g		EXW109/	20/03	2301	40418/3
kad Liquid Scintillation	Analysis											
LSC, Tritium Dist, Soli	d-HTD2,ALL	FSS										
Tritium	U	3.48	+/-3.87	3.09	+/-3.87	6.47	pCi/g		MXP1 10/	01/05	0219	468049 6
Liquid Scint C14, Solid	All,FSS											

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Certificate of Analysis

Address : Contact: Project:	Haddam Neo 362 Injun Ho East Hampto Mr. Pete Ho Soils PO# 00	ck Plant ollow Road on, Connec llenbeck 02332	d sticut 06424				1	Report Da	te: October 3, 20	105	
	Client Sam Sample ID		9527-0002-012F 144481020			Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M
Rad Liquid Scintillation	n Analysis										
Liquid Scint C14, Solid	i All,FSS										
Carbon-14	U	0.230	+/0.145	0.118	+/-0.145	0.240	pCi/g		SLN1 09/22/05	1104 4	462176 8
Liquid Scint Fe55, Soli	d-ALL FSS										
Iron-55	U	-21.1	+/-37.2	25.1	+/-37.3	51.1	pCi/g		BXF1 09/20/05	2256	462172 9
Liquid Scint Ni63, Soli	d-ALL FSS										
Nickel-63	U	-3.41	+/-9.64	8.25	+/9.64	17.3	pCi/g		BXF1 09/20/05	1548 4	462173 10
Liquid Scint Tc99, Soli	d-ALL FSS										
Technetium-99		0.376	+/0.151	0.118	+/0.151	0.242	pCi/g		BXF1 09/19/05	1643 4	461642 11

The following Prep Methods were performed

Company : Connecticut Yankee Atomic Power

Method	Description	Analyst	Date	Time	Prep Batch
Ash Soil Prep	Ash Soil Prep, GL-RAD-A-021B	PD	09/06/05	0914	459654
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	B JI	09/06/05	0751	459653

The following Analytical Methods were performed Method Description

IVACUADUA	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	EML HASL 300, 4.5.2.3
5	EPA 905.0 Modified
6	EPA 906.0 Modified
7	EPA 906.0 Modified
8	EPA EERF C-01 Modified
9	DOE RESL Fe-1, Modified
10	DOE RESL Ni-1, Modified
11	DOE EML HASL-300. Tc-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits	
Americium-243	Alphaspec Am241, Cm, Solid ALL	83	(15%-125%)	
Plutonium-242	Alphaspec Pu, Solid-ALL FSS	84	(15%-125%)	
Carrier/Tracer Recovery	Liquid Scint Pu241, Solid-ALL FS	82	(25%-125%)	
Carrier/Tracer Recovery	GFPC, Sr90, solid – 0.025 pCi/g	61	(25%–125%)	
Carrier/Tracer Recovery	Liquid Scint Fe55, Solid-ALL FS	86	(15%–125%)	

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Certificate of Analysis

Company : Address : Contact:	Connecticut Haddam Nec 362 Injun He East Hampto Mr. Pete Ho	Yankee A ck Plant ollow Roa on, Connee llenbeck	tomic Power d cticut 06424			R	eport Da	e: October 3, 2	005	·		
Project:	Soils PO# 0	02332										
	Client Sam Sample ID	ple ID: :		9527-000 14448102)2-012F 20		Project: YANK01204 Client ID: YANK001 Vol. Recv.:					
Parameter	Qualifier	Result	Uncertainty	LC	TPU	MDA	Units	DF	AnalystDate	Time	Batch M	
Carrier/Tracer Recovery	Liqui	id Scint N	63, Solid-ALL	FS	85	((25%-125%)		~~~			
Carrier/Tracer Recovery	Liqui	id Scint To	99, Solid-ALL	FS	89	((15%-125%)					

Notes:

The Qualifiers in this report are defined as follows :

** Indicates the analyte is a surrogate compound.

B Target analyte was detected in the sample as well as the associated blank.

BD Results below the MDC or low tracer recovery.

E Concentration of the target analyte exceeds the instrument calibration range.

H Analytical holding time exceeded.

J Indicates an estimated value.

U Target analyte was analyzed for but not detected above the MDL or LOD.

UI Uncertain identification for gamma spectroscopy.

X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.

d The 2:1 depletion requirement was not met for this sample

h Sample preparation or preservation holding time exceeded.



Client :	Connecticut	Yankee Atomic Po	wer	<u>QC</u>	<u>Su</u>	<u>mmary</u>			Report D	ate: October 3, Page 1 of	2005 59	
Contact:	Haddam Ne 362 Injun H East Hampt Mr. Pete Ho	ick Plant follow Road ion, Connecticut filenbeck										
Workorder:	144481											
Parmname		NON	1	Sample	Qual	QC	Units	RPD%	REC%	Range A	nist	Date Time
Rad Alpha Spec Batch 4	64478											
QC120094028 Americium-241	6 144481018	DUP	U xert:	-0.00392 +/-0.0928	U	-0.0723 +/-0.0796	pCi/g	; N/A		(0% - 100%) J	AS1	09/26/05 11:06
Curium-242] Line	TPU: U	+/-0.0928 0.0664 +/-0 115	U	+/-0.0803 0.0641 +/-0.0889	pCi/g	; 4		(0% - 100%)		
Curium-243/244		Und	TPU: U cert:	+/-0.115 -0.0699 +/-0.130	U	+/-0.0893 0.040 +/-0.145	pCi/g	; N/A		(0% - 100%)		
QC1200940283 Americium-241	B LCS	1 10.7	rpu:	+/-0.131		+/-0.145 8.94	pCi/g	ſ	84	(75%-125%)		
Curium-242		Uno 1	cert: TPU:		U	+/-0.923 +/-1.53 -0.0597	pCi/g	:				
Curium-243/244		Uno 1 13.1	ert: TPU:			+/-0.037 +/-0.0379 12.7	pCi/g	ſ	97	(75%-125%)		
QC120094028	5 MB	Uno 7	ert: TPU:			+/-1.10 +/-2.05						
Americium-241		Uno	ert: TPU:		U	0.0608 +/-0.108 +/-0.108	pCi/g	5				09/26/05 11:06
Curium-242		Uno	ert: PU:		U	0.0227 +/-0.0603 +/-0.0604	pCi/g	:				
Curium-243/244		Uno 1	ert: TPU:		U	0.0769 +/-0.149 +/-0.149	pCi/g	;				
QC120094028 Americium-241	7 144481018	MS 10.9 Und	U ert:	-0.00392 +/-0.0928		9.40 +/-0.973	pCi/g		86	(75%-125%)		09/26/05 11:06
Curium-242		Unc	TPU: U cert:	+/-0.0928 0.0664 +/-0.115 +/-0.115	U	+/-1.62 0.0465 +/-0.107 +/-0.107	pCi/g					
Curium-243/244		13.4 Und	U ert:	-0.0699 +/-0.130 +/-0.131		12.5 +/-1.12 +/-2.05	pCi/g		93	(75%-125%)		
Batch 4	64479	-	- ••									
QC1200940290 Plutonium-238	0 144481018	DUP	U	0.0316	U	-0.0391	pCi/g	N/A		(0% - 100%) J	ASI	09/26/05 11:06

Workorder: 144481							Page 2 of 9								
Parmname	NOM	Sample Q	Jual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time				
Rad Alpha Spec															
Batch 464479															
	Uncert:	+/-0.120		+/-0.0343											
	TPU:	+/-0.120		+/-0.0347											
Plutonium-239/240	U	0.052	U	-0.0795	pCi/g	g N/A		(0% - 100%))						
	Uncert:	+/-0.118		+/-0.166											
	TPU:	+/-0.118		+/-0.167											
QC1200940292 LCS			II	-0.0130	•Ci/o			(75%-125%)							
Flutomum-236	Lincert [.]		U	+/-0.0601	PC16	5		(1376-12370)	,						
	TPU			+/-0.0602											
Plutonium-239/240	9.87			9.77	pCi/g	ζ.	99	(75%-125%))						
	Uncert:			+/-1.06		•									
	TPU:			+/-1.60											
QC1200940289 MB															
Plutonium-238			U	-0.00778	pCi/g	5				09/27/0	5 14:03				
	Uncert:			+/-0.0152											
	TPU:			+/-0.0153											
Plutonium-239/240	I In contr		U	-0.131	pC1/g	5									
	Uncert:			+/-0.0944											
001200940291 144481018 1	IPU:			-7-0.0939											
Plutonium-238	11 11	0.0316	U	-0.0124	pCi/g	I.		(75%-125%))	09/26/0	5 11:06				
	Uncert:	+/-0.120		+/-0.0533											
	TPU:	+/-0.120		+/-0.0533											
Plutonium-239/240	10.1 U	0.052		10.1	pCi/g	5	100	(75%-125%))						
	Uncert:	+/-0.118		+/-1.01											
	TPU:	+/-0.118		+/-1.57											
Batch 464480															
QC1200940294 144481018	DUP														
Plutonium-241	ប	-0.765	U	-12.7	pCi/g	; N/A		(0% - 100%)	JAS1	09/26/0	5 15:32				
	Uncert:	+/-13.0		+/-12.6											
0.0100000000000000000000000000000000000	TPU:	+/-13.0		+/-12.7											
QC1200940296 LCS Phytonium-241	133			113	nCi/o	,	85	(75%-125%)		09/26/0	5 16.06				
1 10000000-2-71	Uncert:			+/-19.5	Pore	,		(0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
	TPU:			+/-25.4											
QC1200940293 MB															
Plutonium-241			U	-13.6	pCi/g	ç.				09/26/0	5 15:15				
	Uncert:			+/-13.7											
	TPU:			+/-13.9											
QC1200940295 144481018 1	MS 125	A 748		121	-0		00	(750/ 1750/)		00/76/0	\$ 16.40				
Plutonium-241	ISS U	-0.705		131	pcvg	5	90	(1370-12370)	,	09/20/0	5 15.49				
	TDI I.	+/-13.0		+/-20.0											
Rad Camma Sner	Iru:	1.13.0													
Batch 459542															
001200028326 144401001	סתור														
Actinium-228		0.494		0.477	pCi/g	. 4		(0% - 100%)	MJH1	09/30/0	5 23:15				
	Uncert:	+/-0.135		+/-0.146		•									
				+/-0.143											

Workorder:	144481	Page 3 of 9										
Parmname		NOM	Sample Qu	al	QC	Units	RPD%	REC%	Range	Anist	Date	Time
Rad Gamma Sp	ec											
Batch	459542											
		TPU:	+/-0.132									
Americium-24	1	U	-0.0364	U	0.00836	pCi/g	N/A		(0% - 100%)	I.		
		Uncert:	+/-0.0647	+	/-0.0724							
		TPU:	+/-0.0634	+	/-0.0709							
Bismuth-212			0.276		0.327	pCi/g	17	1	(0% - 100%)	ł		
		Uncert:	+/-0.249		+/-0.207							
		TPU:	+/-0.244		+/-0.203							
Bismuth-214			0.644		0.733	pCi/g	13		(0% - 100%)			
		Uncert:	+/-0.118		+/-0.111							
		TPU:	+/-0.116		+/-0.109							
Cesium-134		U	0.0213 UU	Л	0.00	pCi/g	103	I	(0% - 100%)			
		Uncert:	+/-0.0255	+	/-0.0339							
		TPU:	+/-0.025	+	/-0.0333							
Cesium-137			1.38		1.44	pCi/g	4	4	(0% - 100%)			
		Uncert:	+/-0.155		+/-0.118							
		TPU:	+/-0.152		+/-0.116							
Cobalt-60		U	0.0206	U	0.0221	pCi/g	7		(0% - 100%)			
		Uncert:	+/-0.0216	+	/-0.0197							
		TPU:	+/-0.0211	+	/-0.0193							
Europium-152		U	-0.000864	U	0.00826	pCi/g	N/A		(0% - 100%)			
		Uncert:	+/-0.0546	+	/-0.0503							
		TPU:	+/-0.0535	+	/-0.0493							
Europium-154		U	0.0217	U	0.00401	pCi/g	138	1	(0% - 100%)			
		Uncert:	+/-0.0513	+	/-0.0597							
		TPU:	+/-0.0503	+	/-0.0585							
Europium-155		U	0.045	U	0.0291	pCi/g	43	((0% - 100%)			
		Uncert:	+/-0.066	+	/-0.0506							
		TPU:	+/-0.0647	+	/-0.0496							
Lead-212			0.393		0.507	pCi/g	26*					
		Uncert:	+/-0.0596	+	/-0.0722							
		TPU:	+/-0.0584	+	/-0.0707							
Lead-214			0.742		0.837	pCi/g	12		(0% - 20%)			
		Uncert:	+/-0.118		+/-0.118							
		TPU:	+/-0.115		+/-0.115							
Manganese-54		U	-0.0152	U	0.00268	pCi/g	N/A		(0% - 100%)			
		Uncert:	+/-0.0205	+	/-0.0191							
		TPU:	+/-0.0201	+	/-0.0187		• •					
Niobium-94		U	0.00785	U	0.0191	pCi/g	84		(0% - 100%)			
		Uncert:	+/-0.0178	+	/-0.0181							
		TPU:	+/-0.0174	+	/-0.0177							
Potassium-40			5.69		5.82	pCi/g	2		(0% - 20%)			
		Uncert:	+/-0.698		+/-0.729							
n 1:		TPU:	+/-0.684		+/-0.715							
Kadium-226			0.644		0.733	pCi/g	13	((0% - 100%)			
		Uncert:	+/-0.118		+/-0.111							
011 -00		TPU:	+/-0.116		+/-0.109	 .						
Silver-108m		U	-0.0171	U	-0.0161	pCi/g	N/A	((0% - 100%)			
		Uncert:	+/-0.0186	+	/-0.0186							

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Stanlage 44401			A				
workorder: 144481						Page 4 of 9	
Parmname	NOM	Sample Qual	QC	Units RPE	% REC	% Range Anlst	Date Time
Rad Gamma Spec							
Batch 459542							
	TPU:	+/-0.0183	+/-0.0183				
Thallium-208		0.171	0.169	pCi/g	1	(0% - 100%)	
	Uncert:	+/-0.0499	+/-0.0434				
	TPU:	+/-0.0489	+/-0.0425				
QC1200928337 LCS							
Actinium-228		U	0.392	pCi/g			10/02/05 14:40
	Uncert:		+/-0.591				
	TPU:		+/-0.579				
Americium-241	24.4		24.2	pCi/g	99	9 (75%-125%)	
	Uncert:		+/-1.10				
	TPU:		+/-1.08				
Bismuth-212		U	0.127	pCi/g			
	Uncert:		+/-1.07				
	TPU:		+/-1.05				
Bismuth-214		U	0.292	pCi/g			
	Uncert:		+/-0.249				
o	TPU:		+/-0.244	~			
Cesium-134		U	0.102	pCi/g			
	Uncert:		+/-0.167				
G : 105	TPU:		+/-0.163				
Cesium-137	9.40		10.1	pCı/g	108	8 (75%-125%)	
	Uncert:		+/-0.480				
0.1.1.6	TPU:		+/-0.471	<u> </u>	100		
Cobait-60	14.5		14.7	pCi/g	10.	3 (75%-125%)	
	Uncert:		+/-0.673				
Europium 160	TPU:		+/-0.660	-0:1-			
Europium-152	T Ten a surfa	U	0.032	pC1/g			
	Uncert:		+/-0.309				
Europium 154	TPU:	17	+/-0.303	-Cila			
Europium-154	I Incert.	U	U.170	peng			
			+/-0.308				
Furanium-155	IPU:	TT	+7-0.302 0 178	nCi/a			
Europian-155	Uncert	U	+/_0 738	peng			
	TPLI		+/=0.723				
Lead-212	110.	IJ	0.0332	nCi/g			
	Uncert	Ũ	+/-0 164	POPB			
	TPII		+/-0 160				
Lead-214		U	-0.118	nCi/g			
	Uncert:	-	+/-0.221	F8			
			+/-0.217				
Manganese-54		U	0.0338	pCi/g			
C	Uncert:		+/-0.148	10			
	TPU:		+/-0.145				
Niobium-94		U	-0.0406	pCi/g			
	Uncert:		+/-0.150	- •			
	TPU:		+/-0.147				
Potassium-40		U	-0.288	pCi/g			

Workorder:	144481		Page 5 of 9								
Parmname		NOM	Sample Qual	QC	Units	RPD%	REC%	Range	Anist	Date	Time
Rad Gamma Sp	ec										
Batch	459542										
		Uncert:		+/-1.32							
		TPU:		+/-1.29							
Radium-226			U	0.292	pCi/į	B		(75%-125%)		
		Uncert:		+/-0.249							
		TPU:		+/-0.244	~ ~ ~						
Silver-108m		.	U	-0.00166	pCi/g	B					
		Uncert:		+/-0.111							
75-a11:		TPU:	IT	+/-0.109	-0:4	-					
I nailium-208		Uncost	U	U.131	pent	g					
		Uncert:		+/-0.133							
0012000283	115 MB	IPU:		1 /-0.133							
Actinium-228	55 MID		U	0.0566	pCi/s	g				09/30/0	5 09:18
		Uncert:	_	+/-0.0544	F 6	5					
		TPU:		+/-0.0533							
Americium-24	1		U	-0.0331	pCi/s	g					
		Uncert:		+/-0.0927		-					
		TPU:		+/-0.0908							
Bismuth-212			U	0.0624	pCi/g	g					
		Uncert:		+/-0.0994							
		TPU:		+/-0.0974							
Bismuth-214			U	0.0379	pCi/g	g					
		Uncert:		+/-0.029							
		TPU:		+/-0.0284							
Cesium-134		••	U	0.000901	pCi/g	g					
		Uncert:		+/-0.0154							
Casium 127		TPU:		+/-0.0151	-C:/a	_					
Cestum-157		Uncert	U	+/ 0.0218	pens	5					
		Uncert.		+/-0.0218							
Cobalt-60		IPU:	IJ	0.00306	nCi/e						
Cobult-oo		Uncert:	Ũ	+/-0.0139	pere	5					
		TPU:		+/-0.0136							
Europium-152			U	0.0194	pCi/g	g					
-		Uncert:		+/-0.0373		-					
		TPU:		+/-0.0366							
Europium-154			U	0.0326	pCi/g	8					
		Uncert:		+/-0.0354							
		TPU:		+/-0.0347							
Europium-155			U	0.0189	pCi/g	3					
		Uncert:		+/-0.038							
		TPU:		+/-0.0372							
Lead-212		••	Ŭ	0.0165	pCi/g	3					
		Uncert:		+/-0.0437							
Lead 214		TPU:	TT	+/-0.0429 0.00000	-0:/-						
Lvau-214		I Incort.	U	U.UU270	hcn ¹	5					
		Uncert.		+/_0.0329 /_0.0810							
		IPU:		11-0.0310							

OC Summary

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Workorder:	144481				Page 6 of 9									
Parmname			NOM	Sample (Jual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time	
Rad Gamma Spec														
Batch 45	9542													
Manganese-54					U	0.00375	nCi	la						
manganese 5 /			Uncert:		Ũ	+/-0.0119	pol	8						
			TPU:			+/-0.0117								
Niobium-94					U	0.00685	pCi/	/g						
			Uncert:			+/-0.0114	•	•						
			TPU:			+/-0.0112								
Potassium-40					U	0.270	pCi/	/g						
			Uncert:			+/-0.169								
			TPU:			+/-0.166								
Radium-226					U	0.0379	pCi/	'g						
			Uncert:			+/-0.029								
			TPU:			+/-0.0284								
Silver-108m					U	-7.200E-05	pCi/	g						
			Uncert:			+/-0.0124								
			TPU:			+/-0.0122								
Thallium-208					U	0.0118	pCi/	g						
			Uncert:			+/-0.0159								
			TPU:			+/-0.0156								
Rad Gas Flow														
Batch 46	4187													
QC1200939587	144481001	DUP												
Strontium-90				0.0189		0.0204	pCi/	'g 8		(0% - 100%) EXW1	09/28/0	5 23:01	
			Uncert:	+/-0.00732		+/-0.0075								
			TPU:	+/-0.00733		+/-0.00753								
QC1200939589	LCS													
Strontium-90			0.891			0.781	pCi/	g	88	(75%-125%)	09/26/0	5 14:40	
			Uncert:			+/-0.0412								
			TPU:			+/-0.0472								
QC1200939586	MB													
Strontium-90					U	0.00295	pCi/	g				09/28/0	5 23:01	
			Uncert:			+/-0.00237								
			TPU:			+/-0.00237								
QC1200939588 Strontium 00	144481001	MS	2 17	0.0190		267	nCi/	a	94	(750/ 1750/	`	00/27/0	5 12.20	
Suomum-90			J.17 Uncert	±/ 0.00732		±/-0 170	per	8	04	(1370-12370)	07/21/0	5 12.50	
			TDU.	+/-0.00732		+/-0.170								
Ded I land Salatill	tion		IFU:	+/-0.00/33		17-0.104								
Ratch 46	1642													
QC1200933266	144635004	DUP		0.100		0.0451	<u> </u>			(00/ 1000/	DVD	00/10/0		
Technetium-99			U	0.120	U	0.0471	pCi	g U		(0% - 100%) BXFI	09/19/03	5 21:36	
			Uncert:	+/-0.153		+/-0.143								
001000000000	1.00		TPU:	+/-0.153		+/-0.143								
QC1200933268 Technetium-00	LCS		12.0			11.1	~ ^:/	'a	02	(75%-175%	`	00/10/04	5 22.41	
1			I Incart			+/_0 311	per	5	74	10-14070	,	V7/17/0	<i></i> 71	
			TDI 1.			+/_0 412								
OC1200033265	MR		IFU:			17-0.413								
Technetium-99	1120				U	0.0937	pCi/	g				09/19/0	5 21:03	
					-		r							

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Workorder:	144481					<u></u>				Page '	7 of 9		
Parmname			NOM	Sample_	Qual	QC	Units	RPD%	REC%	Range	Anist	Date	Time
Rad Liquid Scint Batch	illation 461642												
			Uncert:			+/-0.166							
			TPU:			+/-0.166							
QC120093320	57 144635004	MS	10.0	0 100		10.5	-0:/	_	00	(750/ 1750/	、	00/10/0	c 12.00
Technetium-99			IZ.0 U	U.120		10.5 +/_0 221	pc _v ;	g	00	(/5%-125%)	09/19/0	3 22:08
			TPI I-	+/-0.155		+/_0.331							
Batch	461685		110.			(7-0.41)							
OC120093338	36 144481009	DUP											
Tritium	• • • • • • • • • • • • • • • • • • • •		υ	8.57	U	4.94	pCi/j	g 0		(0% - 100%) MXP1	09/19/0:	5 19:25
			Uncert:	+/-7.41		+/-6.24							
			TPU:	+/-7.42		+/-6.24							
QC120093338	38 LCS		26.0			21.0	-0:4	~	94	(750/ 1750/	、	00/10/0	5 20.16
Inuun			Lincert			+/-3 76	pen	8	04	(1370-12370	,	07/17/0	5 20.10
			TPI I-			+/-3.70							
OC120093338	5 MB												
Tritium					U	0.119	pCi/	g				09/19/0:	5 18:52
			Uncert:			+/-1.93							
			TPU:			+/-1.93							
QC120093338	37 144481009	MS	75 8	8 57		62.9	nCi/	` ^	84	(759/1759/	`	00/10/0	s 10.59
Innum			1Jncert			+/_11 8	pen	R	67	(13/6-123/6	,	07/17/0	19.50
			TPU	+/-7.42		+/-11.8							
Batch	462172			=									
OC120093479	08 144481018	DUP											
Iron-55			U	-13.8	U	-49.4	pCi/j	g N/A		(0% - 100%) BXF1	09/21/0:	5 12:30
			Uncert:	+/-37.6		+/-75.8							
			TPU:	+/-37.6		+/-75.9							
QC120093480	00 LCS		60.7			64.8	-C:/	-	02	(760/ 1750/	`	00/21/0	\$ 12.02
11011-55			Uncert			+/-7 56	pen	R	93	(1376-12376	,	07/21/0.	, 13.03
			TPU			+/-8.36							
QC120093479	7 MB												
Iron-55					U	-1.81	pCi/j	g				09/21/0	5 12:13
			Uncert:			+/-6.21							
0.0100000			TPU:			+/-6.21							
QC120093475	9 144481018	MS	865 11	-13.8		807	nCi/	a	104	(75%-125%	`	09/21/0	5 12.46
non-55			Uncert:	+/-37.6		+/-105	PCD	6	104	(1370-12370	,	07/21/0	/ 12.40
			TPU:	+/-37.6		+/-118							
Batch	462173												
QC120093480	2 144481018	DUP											
Nickel-63			ບ	-3.72	U	-1.56	pCi/	g N/A		(0% - 100%) BXF1	09/20/0:	5 21:03
			Uncert:	+/-9.67		+/-8.93							
			TPU:	+/-9.67		+/-8.93							
QC120093480	4 LCS		71 3			58 D	nCi/	œ	81	(75%-175%	`	09/20/04	5 21-32
1 119A91-VJ			Uncert:			+/-2.82	Իշոյ	Ð	01	(10/0-140/0	,	07/20/0	
			TPU:			+/-3.15							

Workorder:	144481					<u> </u>				Page	8 of 9		
Parmname			NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Rad Liquid Scintil Batch 4	llation 62173												
QC120093480 Nickel-63	I MB				U	-0.109	pCi/j	g				09/20/0	5 20:46
			Uncert:			+/-1.25	•	-					
			TPU:			+/-1.25							
QC120093480	3 144481018	MS											
Nickel-63			577 U	-3.72		597	pCi/	g	103	(75%-125%)	09/20/0	5 21:21
			Uncert:	+/-9.67		+/-28.2							
Detail ((2)7(TPU:	+/-9.67		+/-34.9							
Batch 4	02170												
QC120093480	6 144481020	DUP		0.020		0.040	-01	. 0		(00/ 1000/		00 00 00	E 14.14
Carbon-14			U	0.230		0.248	pCl/	g ð		(0% - 100%) SLNI	09/22/0	5 14:14
			Uncert:	+/-0.143		+/-0.138							
00120002490	0 T CS		TPU:	+/-0.145		+/-0.138							
Carbon-14			6.82			6.28	pCi/	g	92	(75%-125%	3	09/17/0	5 06:56
			Uncert:			+/-0.391	F 0	5		(,		
			TPU:			+/-0.403							
QC120093480	5 MB												
Carbon-14					U	0.0421	pCi/	g				09/17/0	5 03:29
			Uncert:			+/-0.091							
			TPU:			+/-0.091							
QC120093480	7 144481020	MS											
Carbon-14			6.89 U	0.230		5.67	pCi/	g	82	(75%-125%)	09/17/0	5 06:39
			Uncert:	+/-0.145		+/-0.412							
	<i></i>		TPU:	+/-0.145		+/-0.421							
Batch 4	64550												
QC120094047	0 144481003	DUP											
Tritium			U	1.58	U	-1.95	pCi/į	g N/A		(0% - 100%) MXP1	09/25/0	5 00:06
			Uncert:	+/-5.33		+/-5.48							
00120004047			TPU:	+/-5.33		+/-5.48							
QC1200940472			72 5			62 1	-Ci/	~	96	(75% 125%	`	00/75/0	5 01-10
India			/2.J			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	pent	5	00	(7570-12570)	09/23/0	501.10
			TDI I.			+1-1.13							
OC120094046) MR		IFO.			1/-7.02							
Tritium					U	3.41	pCi/s	7				09/24/0	5 23:34
			Uncert:		_	+/-5.62	r	5					
			TPU:			+/-5.62							
QC120094047	l 144481003	MS											
Tritium			74.3 U	1.58		56.6	pCi/g	g	76	(75%-125%)	09/25/0	5 <mark>0</mark> 0:38
			Uncert:	+/-5.33		+/-7.72							
			TPU:	+/-5.33		+/-7.78							
Batch 4	68049												
QC1200948829	9 144481016	DUP											
Tritium			U	3.93	U	3.02	pCi/g	g 0		(0% - 100%) MXP1	10/01/0	5 03:57
			Uncert:	+/-3.83		+/-3.97							
			TPU:	+/-3.83		+/-3.97							
QC120094883	I LCS												
Tritium			15.1			13.1	pCi/g	3	87	(75%-125%)	10/01/0	5 05:02

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QC Summary

Workorder: 144481						Page 9 of 9	1
Parmname	NOM	Sample Qual	I QC	Units RP	D% REC%	Range An	st Date Time
Rad Liquid Scintillation Batch 468049							
	Uncert:		+/-1.68				
	TPU:		+/-1.70				
QC1200948828 MB							
Tritium		U	1.37	pCi/g			10/01/05 03:24
	Uncert:		+/-1.18				
	TPU:		+/-1.18				
QC1200948830 144481016 MS							
Tritium	49.7 U	3.93	39.8	pCi/g	80	(75%-125%)	10/02/05 18:21
	Uncert:	+/-3.83	+/-7.82				
	TPU:	+/-3.83	+/-7.86				

Notes:

The Qualifiers in this report are defined as follows:

- ** Indicates the analyte is a surrogate compound.
- В Target analyte was detected in the sample as well as the associated blank.
- Results below the MDC or low tracer recovery. BD
- Ε Concentration of the target analyte exceeds the instrument calibration range.
- Н Analytical holding time exceeded.
- Indicates an estimated value. J
- Target analyte was analyzed for but not detected above the MDL or LOD. U
- UI Uncertain identification for gamma spectroscopy.
- Х Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample
- h Sample preparation or preservation holding time exceeded.

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more. ** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

9-MAR-2006 11:14:41.91

SAMPLE TITLE : - FSS DIRT 9527-0002-018 REASON FOR ANALYSIS: Site Characterization SAMPLE ID : 060309009 J/LY/05 11:0 * SAMPLE GEOMETRY : 11MAR : 5-MAR-2006 10:45: 6 3/1/06 SAMPLE TIME * GEO EFFICIENCY DATE: 13-JAN-2006 : DIRT/SEDIMENT SAMPLE TYPE * SAMPLE QUANTITY : 1.17800E+03 GM DETECTOR : DET 1 * LIBRARY : FSS DIRT LAST ENERGY CAL : 9-MAR-2006 07:13: * ENERGY TOLERANCE: 1.00000 KEV/CHANNEL : 4.99926E-01 * HALF LIFE RATIO : 9.00000 START CHANNEL : 100 * END CHANNEL : 4096 ACQ DATE & TIME : 9-MAR-2006 10:53: * DEADTIME (%) : 0.0% PRESET LIVE TIME : 0 00:21:09 * SENSITIVITY : 5.00000 1269.3 Secs ELAPSED REAL TIME : * GAUSSIAN SEN : 10.00000 ELAPSED LIVE TIME : 1269.0 Secs * CORRECTION FACTOR: 1.00000E+06 DECAYED TO O DAYS HOURS FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 060309009 ADC1 DIRTSEDIMENT.CNF;1 ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WIMEAN V1.8 Sample DATE AND TIME 45ED FOR Collected by : KEYES Rublysis on 3/9/2006 Dio Not Reflect REVIEWED BY 2 ACTUSC SAMPLE COllection DATE AND TIME. COMMENTS being connection was performed ************* to Account for the differentic. m 3/ 15/05 Post-NID Peak Search Report It Bkgnd FWHM Channel Left Pw %Err Area Fit Nuclides Energy 1 74.79 155 1.14 149.79 166 145 14 15.5 7.67E+00 PB-212 **PB-214** 1 77.28 218 159 1.13 154.79 145 14 11.5 PB-214 PB-212 0 87.04 68 123 1.16 174.32 172 6 28.2 PE-212 0 93.17 185 1.11 186.58 183 10 23.4 119 0 186.12 112 131 1.26 372.56 369 10 21.2 RA-226 209.50 1.19 0 47 56 419.34 416 6 29.5 AC-228 З 238.62 390 48 1.08 477.62 471 24 5.8 1.87E+00 PE-212 3 241.57 100 72 1.56 483.53 471 24 19.9 PB-214 0 295.23 141 70 0.99 590.94 585 10 13.9 PB-214 0 338.54 94 48 1.07 677.62 673 11 17.4 AC-228 704.34 0 351.88 239 25 1.15 699 10 7.6 PE-214 0 511.40 54 60 1.36 1023.74 1016 12 31.9 0 583.31 103 32 1.33 1167.76 13 15.1 1161 TL-208 39 1.31 1219.94 0 609.37 152 1214 14 11.9 **BI-214** 0 661.94 38 40 1.47 1325.25 1324 8 39.6 CS-137 727.37 23 0.89 1456.35 0 33 1449 15 35.7 **BI-212** 0 911.46 65 10 1.53 1825.27 1818 14 16.4 AC-228

Post-NID Peak Search Report (continued) Sample ID : 060309009 Acquisition date

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It	Energy	Area	Bkgnd	FWHM Channel	Left	Pw %Err	Fit	Nuclides
0	969.22	55	2	1.85 1941.06	1937	10 14.5		AC-228
0	1173.13	76	20	1.00 2349.93	2342	19 18.0		CO-60
0	1332.17	65	4	1.72 2668.97	2660	17 14.4		CO-60
0	1460.64	177	0	1.22 2926.78	2919	15 7.5		K-40

PAGE 1 OF ____

REPORT NAME : DET LIM (V1.1) REPORT DATE : 9-MAR-2006 11:14 REQUESTOR : CAS

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CYAPCO HADDAM NECK STATION

DETECTION LIMIT CONFIRMATION REPORT

Sample ID	: 06030900	09	
Sample Title	: - FSS DI	IRT 9527-0002-018	
Sample Time	: 9-MAR-20	006 10:45	
Count Time	: 9-MAR-20	006 10:53	
Sample Qaunt:	ity : 1.178001	E+03 GM	
Nuclide Libra	ary : FSS_DIRT	Г	
Analyzed By	: CAS		
Sample Media	: 11Mar		
Sample Shelf	: 0		
Detector	: 1		
Required LLD	File : CAS_LLD:	:pge_fss_dirt.DAT - DIR	T/SEDIMENT FSS
-	1.3(12/06	63/0/06	
	Required	Measured	
Nuclide	LLD (yci/GM)	VALUE (vCi/GM)	LLD MET
	pli	pli	
MN-54	6.960E-01	< 4.308E-02	Passed
CO-60	1.520E-01 B^3	112/06 CJ 3-:065E-01 3.29E-01	Okay
NB-94	2.850E-01	< 4.425E-02	Passed
AG-108M	2.860E-01	< 3.798E-02	Passed
CS-134	1.870E-01	< 4.400E-02	Passed
CS-137	3.160E-01 B 🛪	1406 Q 1-171E-01 1.18 E-01	Okay
EU-152	4.040E-01	< 3.709E-01	Passed
EU-154	3.720E-01	< 1.510E-01	Passed
EU-155	1.570E+01	< 1.366E-01	Passed
AM-241	1.030E+00	< 2.494E-01	Passed
	**** End OI Re	eport (I Page) ****	

& Decay carected to \$124/05

Combined Activity-MDA Report Sample ID : 060309009 Page : 3 Acquisition date : 9-MAR-2006 10:53:17

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	8.318E+00	6.754E-01	3.272E-01	1.005E-02	25.422
CO-60 BB31400	3 : 065E-01 3.29E-01	3.509E-02	4.609E-02	1.408E-03	6.650
CS-137 (C3/12/4	1-171E-01 1.18E-0	4.673E-02	6.798E-02	3.167E-03	1.723
TL-208	2.844E-01	4.449E-02	4.408E-02	1.869E-03	6.451
BI-212	7.963E-01	2.859E-01	3.558E-01	1.523E-02	2.238
PB-212	8.698E-01	5.674E-02	5.877E-02	2.013E-03	14.799
BI-214	7.946E-01	1.006E-01	8.396E-02	3.682E-03	9.463
PB-214	9.281E-01	6.321E-02	5.967E-02	2.022E-03	15.555
RA-226	2.837E+00	6.093E-01	7.516E-01	2.341E-02	3.775
AC-228	9.761E-01	8.858E-02	1.647E-01	4.458E-03	5.928

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	1.482E-01		8.996E-02	3.988E-01	1.437E-02	0.372
MN-54	-1.837E-02		1.308E-02	4.308E-02	1.453E-03	-0.426
NB-94	-2.869E-03		1.129E-02	4.425E-02	1.325E-03	-0.065
RU-106	1.206E-01		1.097E-01	4.763E-01	2.121E-02	0.253
AG-108M	-1.361E-02		1.192E-02	3.798E-02	1.676E-03	-0.358
AG-110M	1.147E-02		1.301E-02	5.449E-02	2.528E-03	0.211
SB-125	2.880E-02		3.153E-02	1.320E-01	4.323E-03	0.218
CS-134	-6.845E-03		1.279E-02	4.400E-02	1.918E-03	-0.156
EU-152	1.281E-01		7.789E-02	3.709E-01	1.138E-02	0.346
EU-154	3.532E-02		2.931E-02	1.510E-01	5.973E-03	0.234
EU-155	-1.325E-03		3.926E-02	1.366E-01	4.722E-03	-0.010
RA-223	2.406E-02		6.345E-02	2.180E-01	7.906E-03	0.110
TH-228	2.757E+00		9.568E-01	3.772E+00	1.603E-01	0.731
PA-234	5.954E-01	+	7.273E-02	1.065E-01	4.335E-03	5.590
TH-234	1.020E+00		6.049E-01	2.298E+00	1.991E-01	0.444
U-235	1.721E-01	+	3.695E-02	7.746E-02	2.411E-03	2.222
AM-241	-6.697E-02		7.277E-02	2.494E-01	8.241E-03	-0.269

() occay canceled to \$124/05

PAGE 1 OF ____

REPORT NAME : QA_CHECK (V9.1) REPORT DATE : 9-MAR-2006.11:14 REQUESTOR : CAS

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CYAPCO HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - FSS DIRT 9527-0002-018

SAMPLE No.	:	060309009	OPERATOR NAME	:	CAS
SAMPLE TYPE	:	DIRT/SEDIMENT	SAMPLE GEOMETRY	:	1LMAR
COUNT TIME	:	9-MAR-2006 10:53:17.	SAMPLE QUANTITY	:	1.17800E+03
SAMPLE TIME	:	9-MAR-2006 10:45:00.	DETECTOR	:	DET 1
LIBRARY	:	FSS_DIRT			

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM COMMENTS
K-40 CO-60 CS-137 TL-208 BI-212 PB-212 BI-214 PB-214 RA-226 AC-228	1460.80 1332.49 661.65 583.14 727.17 238.63 609.31 351.92 186.21 911.07	-0.16 -0.32 0.29 0.17 0.20 -0.01 0.05 -0.04 -0.09 0.39	8.318E+00 4 * Peak FWHM = 1.2 3.065E-016 * Peak FWHM = 1.7 3.1171E-016 * Peak FWHM = 1.7 3.1171E-016 * Peak FWHM = 1.3 7.963E-01 * Peak FWHM = 1.3 7.963E-01 * Peak FWHM = 1.1 7.946E-01 * Peak FWHM = 1.3 9.281E-01 * Peak FWHM = 1.1 2.837E+00 * Peak FWHM = 1.3 9.761E-01 * Peak FWHM = 1.3 9.761E-01 * Peak FWHM = 1.5 1.622E+01 = FOTPL CLAMMA ACETULTY
AVG ENER	GI DIFF =	= 0.05	1.623E+01 = TOTAL GAMMA ACTIVITY 1.580E+01 = Total NP Activity 1.171E-01 = Total FP Activity 3.065E-01 = Total AP Activity

74.79 KeV Peak was used in identifying 2 isotopes 77.28 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	ł	ERROR	FLAG	POTENTIAL ID	ACTIVITY
93.17	119.	1.11	5.097E+00	4.327E-03		23.4	Р П	AC-228	3.318E+00 4.339E+00
511.40	54.	1.36	4.820E+00	4.092E-03		31.9	Ŭ	ANN-RD	0.000E+00

3.29 E-01 Decay concerted to 8/24/05
 (1) 1.18 E-01 Decay connected to 8/24/05

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REPORT NAME : QA_CHECK (V9.1) **REPORT DATE : 9-MAR-2006 11:14 REQUESTOR** : CAS

CYAPCO HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 2 % Unidentified/Rejected Peaks = 9.52

- Flags: U Unknown Line R Rejected During Analysis P Positively Identified (line not in analysis library)

Performed by Reviewed by: ** End Of Report (2 Pages) ****

Connecticut Yankee Atomic Power Co.

: **1**

Radiochemistry Count Room

Connecticut Yankee Decommissioning Project

Gamma Spectroscopy Sample Analysis Request Form
Sample Taken By: D. KEYES Date / Time: 3-9-00/1045
Copy of Results To: <u>J. Mc Carthy</u> Dept: Ext:
Sample Description: <u>Sour Sample</u>
Location: 9527-0002-018
Reason for Analysis: <u>Gruma Spec</u>
If from Personnel, Name: <u>N/N</u> EID <u>N/M</u> RWP: <u>w/A</u>
Contamination Levels:
β γ CCPM / DPMα CCPM / DPMmr/hr
Sample Weight / Volume: // (cc, mi, grams, etc.)
Sample Container: Litze Merzine M
Is this sample for free release? YES or NO (drcie one)
Is this sample being shipped offsite? YES or NO (circle one)
Save / Return sample after analysis? (YES or NO (circle one)
Other info:
If this sample requires special storage requirements, please describe:
~/h
Responsible Individual for Disposal of Sample
Name: F55 Group Dept: Ext:
Sample delivered to Count Room: Date / Time: <u>3-9-06 1045</u>
COUNT ROOM USE ONLY
Qualitative or Quantitative Analysis? Explain Below. <u>Chem Memy FSS Dirt Quantitative</u> 16 min Ct
Sample ID Number: 066309009
Analysis Completed By: Int Messing Date: 3-9-06
Sample Storage Location: CT Rom Calo inela
Radiochemistry Supervisor Review: Date: Date:

9-MAR-2006 13:34:59.56

CONNECTICUT YANKEE HADDAM NECK STATION

SAMPLE TITLE : - FSS DIRT P527-0002-020F **REASON FOR ANALYSIS: Site Characterization** SAMPLE ID : 060309010 * SAMPLE GEOMETRY : 1LMAR SAMPLE TIME : 9-MAR-2006 09:24: * GEO EFFICIENCY DATE: 13-JAN-2006 SAMPLE TYPE : DIRT/SEDIMENT * SAMPLE QUANTITY : 9.47000E+02 GM : DET 1 : FSS DIRT DETECTOR * LIBRARY LAST ENERGY CAL : 9-MAR-2006 07:13: * ENERGY TOLERANCE: 1.00000 KEV/CHANNEL : 4.99926E-01 * HALF LIFE RATIO : 9.00000 START CHANNEL : 100 * END CHANNEL : 4096 ACQ DATE & TIME : 9-MAR-2006 13:07: * DEADTIME (%) : 0.0% PRESET LIVE TIME : 0 00:23:07 * SENSITIVITY : 5.00000 ELAPSED REAL TIME : * GAUSSIAN SEN : 10.00000 1387.3 Secs ELAPSED LIVE TIME : 1387.0 Secs * CORRECTION FACTOR: 1.00000E+06 DECAYED TO 0 DAYS HOURS : CAS\$DISK: [NEU.SAMPLE.RP.NEW]060309010 ADC1 DIRTSEDIMENT.CNF;1 FILE IDENT ANALYSES : PEAK V16.8 NID V3.2 MINACT V2.8 WTMEAN V1.8 Collected by : E.TORRES REVIEWED BY COMMENTS :

Post-NID Peak Search Report

41

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
3	74.80	119	130	1.09	149.83	145	17	18.3	2.25E+00	PB-212 PB-214
3	77.18	167	113	1.17	154.59	145	17	13.6		PB-214 PB-212
1	87.36	89	137	1.14	174.95	172	11	23.5	2.36E+00	PB-212
1	89.89	43	107	0.97	180.02	172	11	41.1		
0	93.47	113	242	2.90	187.18	183	15	31.4		
0	128.86	37	97	1.10	257.98	255	7	46.9		
0	186.16	56	115	0.79	372.64	369	8	35.8		RA-226
3	238.68	391	54	1.07	477.75	471	18	5.8	2.00E+00	PB-212
3	241.95	83	59	1.83	484.29	471	18	21.9		PB-214
0	295.25	121	55	0.92	590.97	587	9	14.2		PB-214
0	338.31	84	42	1.28	677.16	671	12	18.8		AC-228
0	352.00	172	48	1.12	704.56	699	12	11.1		PB-214
0	463.22	43	30	1.23	927.25	921	12	29.9		AC-228
0	511.68	38	58	1.51	1024.29	1015	18	49.9		
0	583.31	91	13	1.15	1167.75	1161	13	13.3		TL-208
0	609.34	144	16	1.20	1219.89	1214	11	10.0		BI-214
0	661.98	197	46	1.48	1325.34	1318	15	10.3		CS-137

Post-NID Peak Search Report (continued)Page : 2Sample ID : 060309010Acquisition date : 9-MAR-2006 13:07:50

It	Energy	Area	Bkgnd	FWHM Channel	Left	Pw %Err	Fit	Nuclides
0	727.38	27	6	1.96 1456.37	1448	12 26.4		BI-212
0	911.30	79	4	1.59 1824.95	1817	16 12.6		AC-228
0	969.28	27	17	2.37 1941.17	1936	9 34.3		AC-228
0	1460.98	140	11	1.77 2927.45	2920	13 9.6		K-40

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Combined Activity-MDA Report Sample ID : 060309010 Page : 3 Acquisition date : 9-MAR-2006 13:07:50

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (pCi/GM)	MDA error	Act/MDA
K-40	7.505E+00	7.588E-01	5.389E-01	1.655E-02	13.927
CS-137	6.877E-01	7.760E-02	6.613E-02	3.081E-03	10.400
TL-208	2.863E-01	3.989E-02	4.779E-02	2.027E-03	5.990
BI-212	7.363E-01	1.973E-01	4.492E-01	1.923E-02	1.639
PB-212	1.004E+00	6.501E-02	5.457E-02	1.869E-03	18.393
BI-214	8.555E-01	9.313E-02	1.039E-01	4.558E-03	8.231
PB-214	8.145E-01	6.935E-02	8.277E-02	2.804E-03	9.840
RA-226	1.623E+00	5.833E-01	8.990E-01	2.800E-02	1.805
AC-228	1.049E+00	1.043E-01	1.537E-01	4.162E-03	6.822

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	2.377E-01		1.127E-01	5.015E-01	1.807E-02	0.474
MN-54	5.990E-03		1.251E-02	5.351E-02	1.806E-03	0.112
CO-60	3.052E-02		1.537E-02	7.916E-02	2.419E-03	0.386
NB-94	2.988E-03		1.138E-02	4.882E-02	1.462E-03	0.061
RU-106	4.311E-02		9.983E-02	4.309E-01	1.919E-02	0.100
AG-108M	-1.636E-03		1.453E-02	5.654E-02	2.495E-03	-0.029
AG-110M	5.457E-03		1.451E-02	5.562E-02	2.580E-03	0.098
SB-125	-3.689E-02		3.495E-02	1.283E-01	4.199E-03	-0.288
CS-134	1.230E-02		1.274E-02	5.218E-02	2.275E-03	0.236
EU-152	8.809E-02		9.097E-02	4.010E-01	1.230E-02	0.220
EU-154	-4.783E-02		3.819E-02	1.182E-01	4.675E-03	-0.405
EU-155	1.645E-02		4.733E-02	1.672E-01	5.777E-03	0.098
RA-223	2.247E-02		7.960E-02	2.684E-01	9.732E-03	0.084
TH-228	7.907E-01		1.160E+00	4.172E+00	1.773E-01	0.190
PA-234	5.169E-01	+	7.350E-02	1.271E-01	5.174E-03	4.066
TH-234	6.934E-01		7.086E-01	2.620E+00	2.271E-01	0.265
U-235	9.841E-02	+	3.538E-02	7.685E-02	2.392E-03	1.281
AM-241	2.273E-02		7.309E-02	2.703E-01	8.931E-03	0.084

PAGE 1 OF ____

REPORT NAME : DET LIM (V1.1) REPORT DATE : 9-MAR-2006 13:35 REQUESTOR : CAS

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CYAPCO HADDAM NECK STATION

DETECTION LIMIT CONFIRMATION REPORT

Sample ID	: 06030903		
Sample Title	: - FSS D	[RT P527-0002-020F	
Sample Time	: 9-MAR-20	06 09:24	
Count Time	: 9-MAR-20	06 13:07	
Sample Qaunti	lty : 9.470001	3+ 02 GM	
Nuclide Libra	ry : FSS DIR	r	
Analyzed By	· CAS		
Sample Media	: 1LMAR		
Sample Shelf	: 0		
Detector	: 1		
Required LLD	File : CAS_LLD:	:pge_fss_dirt.DAT -	DIRT/SEDIMENT FSS
	6 3/12/06	63/12/06	
	Required	Measured	
Nuclide	LLD (UCI/GM)	VALUE (UZI/GM)	LLD MET
	pli	pli	•
MN-54	6.960E-01	< 5.351E-02	Passed
CO-60	1.520E-01	< 7.916E-02	Passed
NB-94	2.850E-01	< 4.882E-02	Passed
AG-108M	2.860E-01	< 5.654E-02	Passed
CS-134	1.870E-01	< 5.218E-02	Passed
CS-137	3.160E-01	6.877E-01	Okay
EU-152	4.040E-01	< 4.010E-01	Passed
EU-154	3.720E-01	< 1.182E-01	Passed
EU-155	1.570E+01	< 1.672E-01	Passed
AM-241	1.0308+00	< 2 703E-01	Paggod
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**** End Of Report (1 Page) ****

PAGE 1 OF ____

REPORT NAME : QA_CHECK (V9.1) REPORT DATE : 9-MAR-2006 13:35 REQUESTOR : CAS

CYAPCO HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - FSS DIRT P527-0002-020F

SAMPLE No.	:	060309010	OPERATOR NAME	:	CAS
SAMPLE TYPE	:	DIRT/SEDIMENT	SAMPLE GEOMETRY	:	11Mar
COUNT TIME	:	9-MAR-2006 13:07:50.	SAMPLE QUANTITY	:	9.47000E+02
SAMPLE TIME	:	9-MAR-2006 09:24:00.	DETECTOR	:	DET 1
LIBRARY	:	FSS_DIRT			

ISOTOPE	PEAK ENERGY	ENERGY DIFF (KEV)	DECAY CORR pCi/GM	COMMENTS
K-40 CS-137 TL-208 BI-212 PB-212 BI-214 PB-214 RA-226 AC-228 AVG ENER	1460.80 661.65 583.14 727.17 238.63 609.31 351.92 186.21 911.07	0.18 0.33 0.17 0.21 0.06 0.03 0.08 -0.05 0.23 	7.505E+00 6.877E-01 2.863E-01 7.363E-01 1.004E+00 8.555E-01 8.145E-01 1.623E+00 1.049E+00 1.456E+01 = 1.387E+01 =	<pre>* Peak FWHM = 1.8 * Peak FWHM = 1.5 * Peak FWHM = 1.2 * Peak FWHM = 2.0 * Peak FWHM = 1.1 * Peak FWHM = 1.1 * Peak FWHM = 1.1 * Peak FWHM = 0.79 * Peak FWHM = 1.6 TOTAL GAMMA ACTIVITY Total NP Activity</pre>
			6.877E-01 =	Total FP Activity

74.80 KeV Peak was used in identifying 2 isotopes 77.18 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

ENERGY	NET AREA	FWHM	GAMMA/SEC	GAMMA/SEC /GM	¥ ERROR	FLAG	POTENTIAL ID	ACTIVITY
89.89	43.	0.97	1.783E+00	1.883E-03	41.1	p	BI-214	1.891E+01
						₽	AC-228	2.367E+00
93.47	113.	2.90	4.427E+00	4.675E-03	31.4	P	AC-228	3.526E+00
						ប	TH-234	4.704E+00
128.86	37.	1.10	1.146E+00	1.211E-03	46.9	U	KR-85M	1.994E+01
						P	AC-228	1.141E+00
511.68	38.	1.51	3.113E+00	3.287E-03	49.9	U	ANN-RD	0.000E+00

REPORT NAME : QA_CHECK (V9.1) . REPORT DATE : 9-MAR-2006 13:35 REQUESTOR : CAS

CYAPCO HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 4 % Unidentified/Rejected Peaks = 19.05

Flags: U - Unknown Line
 R - Rejected During Analysis
 P - Positively Identified (line not in analysis library)

sauce Performed by: Reviewed by: End Of Report (* * * 2 Pages) ****

PAGE 2 OF ____

9-MAR-2006 13:26:28.65

CONNECTICUT YANKEE HADDAM NECK STATION

LAST ENERGY CAL : 9-MAR-2006 07:18: * ENERGY TOLERANCE: 1.00000 KEV/CHANNEL : 5.01024E-01 * HALF LIFE RATIO : 9.00000 : 100 START CHANNEL * END CHANNEL : 4096 ACQ DATE & TIME : 9-MAR-2006 13:09: * DEADTIME (%) : 0.0% PRESET LIVE TIME : 0 00:16:43 : 5.00000 * SENSITIVITY ELAPSED REAL TIME : 1003.2 Secs * GAUSSIAN SEN : 10.00000 ELAPSED LIVE TIME : 1003.0 Secs * CORRECTION FACTOR: 1.00000E+06 DECAYED TO 0 DAYS HOURS FILE IDENT : CAS\$DISK: [NEU.SAMPLE.RP.NEW] 060309011 ADC2 DIRTSEDIMENT.CNF;1

Collected by : D.JOHNSON REVIEWED BY : COMMENTS .

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	*Err	Fit	Nuclides
4	74.83	113	143	1.42	149.84	145	13	20.6	2.51E+00	PB-212
										PB-214
4	77.16	181	93	0.98	154.50	145	13	11.4		PB-214
										PB-212
0	87.06	51	124	1.07	174.26	172	7	38.8		PB-212
0	92.96	83	155	1.35	186.04	182	9	29.5		
0	185.63	67	97	1.23	371.06	367	9	29.1		RA-226
0	209.83	51	80	0.80	419.38	415	9	34.9		AC-228
4	238.53	360	53	1.13	476.70	468	21	6.2	2.71E+00	PB-212
4	241.60	78	67	2.30	482.82	468	21	32.2		PB-214
0	295.27	106	66	1.40	590.02	582	13	18.5		PB-214
0	300.43	28	59	1.08	600.32	596	11	56.8		
0	338.96	59	71	0.85	677.29	669	15	33.8		AC-228
0	351.97	194	57	1.30	703.28	698	12	10.6		PB-214
0	462.65	27	29	1.23	924.41	918	10	42.4		AC-228
0	510.51	70	36	2.24	1020.03	1011	18	23.4		
0	583.50	94	42	1.13	1165.92	1161	16	18.9		TL-208
0	609.20	117	19	1.74	1217.28	1210	13	12.1		BI-214
0	661.53	227	39	1.07	1321.90	1312	16	9.1		CS-137

Post-NID Peak Search Report (continued)Page : 2Sample ID : 060309011Acquisition date : 9-MAR-2006 13:09:34

It	Energy	Area	Bkgnd	FWHM Channel	Left	Pw 윇	Err	Fit	Nuclides
0	728.76	22	23	1.03 1456.30	1445	15 5	1.1		
0	910.87	77	10	1.69 1820.50	1813	12 1	3.8		AC-228
2	964.08	21	4	2.27 1926.94	1923	22 2	7.5	9.57E-01	AC-228
2	968.63	56	12	2.51 1936.05	1923	22 1	9.6		AC-228
0	1120.45	31	3	1.17 2239.84	2234	12 2	1.0		BI-214
0	1460.36	183	13	2.33 2920.39	2912	17 0	8.6		K-40
0	1764.03	24	3	1.52 3528.86	3520	15 2	6.9		BI-214

---- Identified Nuclides ----

Nuclide	Activity (pCi/GM)	Act error	MDA (nCi/GM)	MDA error	Act/MDA	
MECTIMO	(per/on/		(E)			
K-40	9.088E+00	8.431E-01	6.603E-01	2.239E-02	13.762	
CS-137	7.612E-01	7.721E-02	5.378E-02	2.439E-03	14.155	
TL-208	2.847E-01	5.503E-02	5.514E-02	2.289E-03	5.164	
PB-212	9.574E-01	6.716E-02	7.458E-02	2.582E-03	12.837	
BI-214	7.295E-01	7.482E-02	1.085E-01	4.649E-03	6.721	
PB-214	8.496E-01	7.819E-02	9.149E-02	3.013E-03	9.287	
RA-226	2.100E+00	6.161E-0 1	9.634E-01	3.266E-02	2.179	
AC-228	1,097E+00	1.055E-01	1.823E-01	5.197E-03	6.020	

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/GM)	K.L. Ided	Act error	MDA (pCi/GM)	MDA error	Act/MDA
BE-7	-1.513E-02		1.001E-01	3.844E-01	1.372E-02	-0.039
MN-54	-8.817E-03		1.556E-02	5.566E-02	1.910E-03	-0.158
CO-60	3.106E-02		1.513E-02	7.799E-02	2.699E-03	0.398
NB-94	-1.184E-02		6.848E-03	9.612E-03	2.986E-04	-1.232
RU-106	-8.193E-02		9.311E-02	3.360E-01	1.460E-02	-0.244
AG-108M	-9.373E-03		1.229E-02	4.436E-02	1.911E-03	-0.211
AG-110M	5.681E-03		1.297E-02	5.261E-02	2.377E-03	0.108
SB-125	1.692E-02		3.491E-02	1.400E-01	4.579E-03	0.121
CS-134	-2.368E-02		1.295E-02	3.461E-02	1.475E-03	-0.684
EU-152	9.395E-02		5.763E-02	3.159E-01	1.082E-02	0.297
EU-154	-4.129E-02		5.875E-02	1.993E-01	8.170E-03	-0.207
EU-155	4.990E-02		4.250E-02	1.530E-01	5.435E-03	0.326
BI-212	6.648E-01		1.550E-01	7.317E-01	3.080E-02	0.909
RA-223	1.401E-02		7.889E-02	2.995E-01	1.044E-02	0.047
TH-228	6.729E-01		1.335E+00	4.450E+00	1.887E-01	0.151
PA-234	5.531E-01	+	6.694E-02	1.365E-01	5.481E-03	4.053
TH-234	1.507E+00		7.324E-01	2.621E+00	2.259E-01	0.575
U-235	1.274E-01	+	3.738E-02	9.274E-02	3.143E-03	1.373
AM-241	1.629E-01		6.864E-02	2.652E-01	8.610E-03	0.614

PAGE 1 OF ____

REPORT NAME : DET LIM (V1.1) REPORT DATE : 9-MAR-2006 13:26 REQUESTOR : CAS

CYAPCO HADDAM NECK STATION

DETECTION LIMIT CONFIRMATION REPORT

Sample ID	: 0603090	11	
Sample Title	: - FSS D	IRT 9527-0002-021F	
Sample Time	: 9-MAR-2	006 09:26	
Count Time	: 9-MAR-2	006 13:09	
Sample Oaunt:	ity : 8.73000	E+02 GM	
Nuclide Libra	ary : FSS DIR	Г	
Analyzed By	: CAS		
Sample Media	: 1LMAR		
Sample Shelf	: 0		
Detector	: 2		
Required LLD	File : CAS LLD	:pge fss dirt.DAT - 1	DIRT/SEDIMENT FSS
-	(state		·
	Required	Measured	
Nuclide	LLD (uei/gm)	VALUE (uci/GM)	LLD MET
	jù	pa pa	
MN-54	6.960E-01	< 5.566E-02	Passed
CO-60	1.520E-01	< 7.799E-02	Passed
NB-94	2.850E-01	< 9.612E-03	Passed
AG-108M	2.860E-01	< 4.436E-02	Passed
CS-134	1.870E-01	< 3.461E-02	Passed
CS-137	3.160E-01	7.612E-01	Okay
EU-152	4.040E-01	< 3.159E-01	Passed
EU-154	3.720E-01	< 1.993E-01	Passed
EU-155	1.570E+01	< 1.530E-01	Passed
AM-241	1.030E+00	< 2.652E-01	Passed

**** End Of Report (1 Page) ****

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PAGE 1 OF ____

CYAPCO HADDAM NECK STATION

POST NID QA ANALYSIS

TITLE : - FSS DIRT 9527-0002-021F

SAMPLE No.	: 060309	011	OPERAT	OR NAME : CAS	
SAMPLE TYPE	E : DIRT/S	EDIMENT	SAMPLE	GEOMETRY : 1LMA	R
COUNT TIME	: 9-MAR-	2006 13:09	:34. SAMPLE	QUANTITY : 8.73	000E+02
SAMPLE TIME	E : 9-MAR-	2006 09:26	:00. DETECT	OR : DET	2
LIBRARY	: FSS DI	RT			
	-				
	PEAK	ENERGY	DECAY CORR		
ISOTOPE	ENERGY I	IFF (KEV)	pCi/GM	COMMENTS	
K-40	1460.80	-0.44	9.088E+00	* Peak FWHM =	2.3
CS-137	661.65	-0.11	7.612E-01	* Peak FWHM =	1.1
TL-208	583.14	0.36	2.847E-01	* Peak FWHM =	1.1
PB-212	238.63	-0.09	9.574E-01	* Peak FWHM =	1.1
BI-214	609.31	-0.11	7.295E-01	* Peak FWHM =	1.7
PB-214	351.92	0.05	8.496E-01	* Peak FWHM =	1.3
RA-226	186.21	-0.58	2.100E+00	* Peak FWHM =	1.2
AC-228	911.07	-0.20	1.0978+00	* Peak FWHM =	1.7
	22000				
AVG ENERG	W DIFF -	-0 14	1 587R±01 m	TOTAL CAMMA ACT	TVTTV
		0.72	1 5118+01 -	Total NP Activi	+
			7 6128-01 -	Total PD Activi	
			1.0126-VI =	TOTAT LE WOLLAI	.uy

74.83 KeV Peak was used in identifying 2 isotopes 77.16 KeV Peak was used in identifying 2 isotopes

UNIDENTIFIED/REJECTED PEAKS

			ana / 200	GAMMA/SEC				POTENTIAL	
ENERGY	NET AREA	FWHM	Gamma/Sec	/GM	¥	ERROR	FLAG	TD	ACTIVITY
92.96	83.	1.35	3.121E+00	3.575E-03		29.5	P	PB_X-RAY	0.000E+00
							P	AC-228	2.786E+00
							U	TH-234	3.606E+00
300.43	28.	1.08	1.277E+00	1.463E-03		56.8	P	PB-212	1.170E+00
510.51	70.	2.24	5.165E+00	5.917E-03		23.4	P	AC-228	3.433E+01
							U	ANN-RD	0.000E+00
728.76	22.	1.03	2.216E+00	2.539E-03		51.1	U	Bi-212	

PAGE 2 OF ____

- REPORT NAME : QA_CHECK (V9.1) REPORT DATE : 9-MAR-2006 13:26 **REQUESTOR** : CAS

CYAPCO HADDAM NECK STATION

POST NID QA ANALYSIS

Total Unidentified/Rejected Peaks = 4 & Unidentified/Rejected Peaks = 16.67

Flags: U - Unknown Line

- R Rejected During Analysis
 P Positively Identified (line not in analysis library)

Adura Performed by Reviewed by 2 Pages *** End Of Report () ****

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Connecticut Y 362 Injun I	ankee An Hollow Road, 1 860-26	tomic Po East Hampton 7-2556	wer C , ct 0642	iompan 4	y			Ch	ain o	of Cu	stody	/ Form	No. 2006-00149										
Project Name: Haddam N	eck Decom	missioning		T			A	nalyses	Reque	sted		Lab Use Only											
Contact Name & Phone: Jack McCarthy 860-267-25	tact Name & Phone: McCarthy 860-267-2556 Ext. 3024		2556 Ext. 3024		act Name & Phone: McCarthy 860-267-2556 Ext. 3024		act Name & Phone: McCarthy 860-267-2556 Ext. 3024		me & Phone: hy 860-267-2556 Ext. 3024		ne & Phone: y 860-267-2556 Ext. 3024		Media Code	Sample Type	Container Size-							Comments:	
Analytical Lab (Name, City, State On-Site Chemistry Laboratory Priority: 30 D. 15 D. 7 D. Other: ASAP			Code	ode &Type Code	SSGAM	ISS ALL	QTHSS	SSTRU	SSOTHR	SSOTHR													
							н	H		' K													
Sample Designation	Date	Time										Comment, Preservation	Lab Sample ID										
9527-0002-020F	3/9/06	0924	TS	G	ILM	X				1		Dried by FSS techs	060309010										
9527-0002-021F	3/9/06	0926	TS	G	ILM	X						Dried by FSS techs	060309011										
NOTES: PO #: N/A MSR #: N/A ITP QA Radwaste QA Non QA 1) Relinquished By Date/Time 2) Received/By Date/Time 3) Reliquished By Date/Time 4) Received By Date/Time									Samples Shipped Via: Fed Ex UPS Hand Other Bill of Lading #	Internal Container Temp.: Deg. C Custody Sealed? Y D N D Custody Seal Intact? Y D N D													
5) Relinquished By		Date/Time	1	6) Receiv	/ed By				Date/1	Fime													

EAST MOUNTAIN SIDE SURVEY UNIT 9527-0002

RELEASE RECORD

Attachment 2b Sample and Scan Area Data (12 Pages)

Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SL-00-01-0	10800	12283	10700		8/23/2005	8:29 AM	1105	1006
9527-02-SL-00-02-0	9950	11374	10600		8/23/2005	8:45 AM	1105	1006
9527-02-SL-00-03-0	11400	12924	11300		8/23/2005	8:56 AM	1105	1006
9527-02-SL-00-04-0	14000	15689	13100		8/23/2005	9:04 AM	1105	1006
9527-02-SL-00-05-0	9420	10805	10200		8/23/2005	11:11 AM	1105	1006
9527-02-SL-00-06-0	9960	11384	9800		8/23/2005	1:46 PM	1105	1006
9527-02-SL-00-07-0	14000	15689	14400		8/23/2005	9:15 AM	1105	1006
9527-02-SL-00-08-0	12500	14096	12800		8/23/2005	11:14 AM	1105	1006
9527-02-SL-00-09-0	14100	15795	12400		8/23/2005	11:33 AM	1105	1006
9527-02-SL-00-10-0	18300	20231	18600		8/23/2005	2:11 PM	1105	1006
9527-02-SL-00-11-0	17700	19599	16700		8/23/2005	10:26 AM	1105	1006
9527-02-SL-00-12-0	18300	20231	17100		8/23/2005	2:28 PM	1105	1006
9527-02-SL-00-13-0	18900	20862	17700		8/23/2005	2:21 PM	1105	1006
9527-02-SL-00-14-0	17700	19599	17600		8/23/2005	10:41 AM	1105	1006
9527-02-SL-00-15-0	23800	26002	23300		8/23/2005	10:51 AM	1105	1006
9527-02-SL-00-16-0	17600	19493	15700		8/23/2005	10:33 AM	1105	1006
9527-02-SL-00-17-0	11400	12924	11400		8/23/2005	1:22 PM	1105	1006

9527-0002 SCAN AREA 1 SECTIONS 1 THROUGH 4

Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-01-01-0	30400	32888	18000		8/23/2005	2:57 PM	1105	1006
9527-02-SC-01-02-0	25800	28092	23500		8/23/2005	3:02 PM	1105	1006
9527-02-SC-01-03-0	24000	26211	21100		8/23/2005	3:05 PM	1105	1006
9527-02-SC-01-04-0	27500	29867	19100		8/23/2005	3:08 PM	1105	1006
9527-02-SC-01-05-0	24200	26420	19300		8/23/2005	3:12 PM	1105	1006
9527-02-SC-01-06-0	25700	27988	20200		8/23/2005	3:14 PM	1105	1006
9527-02-SC-01-07-0	24600	26838	16700		8/23/2005	3:18 PM	1105	1006
9527-02-SC-01-09-0	21700	23802	17400		8/23/2005	3:25 PM	1105	1006
9527-02-SC-01-10-0	20300	22333	15900		8/23/2005	3:31 PM	1105	1006
9527-02-SC-01-11-0	16000	17805	15600		8/23/2005	3:33 PM	1105	1006
9527-02-SC-01-12-0	19900	21913	15000		8/23/2005	3:36 PM	1105	1006
9527-02-SC-01-13-0	14900	16642	14600		8/23/2005	3:39 PM	1105	1006
9527-02-SC-01-14-0	14300	16007	15400		8/23/2005	3:42 PM	1105	1006
9527-02-SC-01-15-0	16400	18228	16500		8/23/2005	3:44 PM	1105	1006
9527-02-SC-01-16-0	13400	15052	12200		8/24/2005	8:31 AM	1112	1010
9527-02-SC-01-17-0	12300	13883	10100		8/24/2005	8:38 AM	1112	1010
9527-02-ER-01-17-1	12300	13883	209000	+	8/24/2005	8:55 AM	1112	1010
9527-02-SC-01-18-0	11700	13244	10800		8/24/2005	8:43 AM	1112	1010
9527-02-SC-01-19-0	23700	25897	18000		8/24/2005	9:14 AM	1112	1010
9527-02-SC-01-19-0	23700	25897	7560		8/24/2005	9:06 AM	1112	1010
9527-02-SC-01-20-0	19400	21388	18000		8/24/2005	9:17 AM	1112	1010
9527-02-SC-01-21-0	24000	26211	17900		8/24/2005	9:20 AM	1112	1010
9527-02-SC-01-22-0	20500	22543	17800		8/24/2005	9:23 AM	1112	1010
9527-02-SC-01-23-0	16700	18544	15600		8/24/2005	9:26 AM	1112	1010
9527-02-SC-01-24-0	18500	20441	17900		8/24/2005	9:33 AM	1112	1010
9527-02-SC-01-25-0	18000	19915	15300		8/24/2005	9:40 AM	1112	1010
9527-02-SC-01-26-0	16700	18544	16000		8/24/2005	9:43 AM	1112	1010
9527-02-SC-01-27-0	16300	18122	15200		8/24/2005	9:45 AM	1112	1010
9527-02-SC-01-28-0	12900	14521	13000		8/24/2005	10:01 AM	1112	1010
9527-02-SC-01-29-0	13600	15264	13600		8/24/2005	10:05 AM	1112	1010

AL - Action Level

9527-0002 SCAN AREA 1 SECTIONS 1 THROUGH 4

Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527 -02- SC-01-30-0	12600	14202	13000		8/24/2005	10:07 AM	1112	1010
9527-02-SC-01-31-0	12200	13776	13500		8/24/2005	10:12 AM	1112	1010
9527-02-SC-01-32-0	11300	12817	12100		8/24/2005	10:27 AM	1112	1010
9527-02-SC-01-33-0	12700	14308	11400		8/24/2005	10:31 AM	1112	1010
9527-02-SC-01-34-0	12900	14521	12600		8/24/2005	10:33 AM	1112	1010
9527-02-SC-01-35-0	12100	13670	13100		8/24/2005	10:36 AM	1112	1010
9527-02-SC-01-36-0	12600	14202	12200		8/24/2005	10:38 AM	1112	1010

9527-0002 SCAN AREA 2 SECTIONS 5 THROUGH 12

Sample Name	Background (cpm)	Action Level (cpm)	Results (<u>cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9527-02-SC-02-01-0	12200	13776	11300		8/24/2005	8:29 AM	1105	1006
9527-02-SC-02-02-0	11200	12710	11200		8/24/2005	8:33 AM	1105	1006
9527-02-SC-02-03-0	11600	13137	11500		8/24/2005	8:34 AM	1105	1006
9527-02-SC-02-04-0	11900	13457	12400		8/24/2005	8:37 AM	1105	1006
9527-02-SC-02-05-0	13200	14840	12900		8/24/2005	8:39 AM	1105	1006
9527-02-SC-02-06-0	11400	12924	10500		8/24/2005	8:42 AM	1105	1006
9527-02-SC-02-07-0	12600	14202	11700		8/24/2005	8:44 AM	1105	1006
9527-02-SC-02-08-0	11000	12497	11400		8/24/2005	8:46 AM	1105	1006
9527-02-SC-02-09-0	12300	13883	11700		8/24/2005	8:48 AM	1105	1006
9527-02-SC-02-10-0	11300	12817	11800		8/24/2005	8:52 AM	1105	1006
9527-02-SC-02-11-0	11300	12817	10900		8/24/2005	8:59 AM	1105	1006
9527-02-SC-02-12-0	11800	13350	10600		8/24/2005	12:03 AM	1105	1006
9527-02-SC-02-13-0	11400	12924	12000		8/24/2005	9:06 AM	1105	1006
9527-02-SC-02-14-0	11900	13457	10100		8/24/2005	9:08 AM	1105	1006
9527-02-SC-02-15-0	12900	14521	12300		8/24/2005	9:10 AM	1105	1006
9527-02-SC-02-16-0	12400	13989	12700		8/24/2005	9:14 AM	1105	1006
9527-02-SC-02-17-0	11900	13457	13100		8/24/2005	9:18 AM	1105	1006
9527-02-SC-02-18-0	12800	14415	12200		8/24/2005	9:21 AM	1105	1006
9527-02-SC-02-19-0	11800	13350	11800		8/24/2005	9:24 AM	1105	1006
9527-02-SC-02-20-0	12500	14096	12900		8/24/2005	9:30 AM	1105	1006
9527-02-SC-02-21-0	14700	16430	11400		8/24/2005	9:35 AM	1105	1006
9527-02-SC-02-22-0	12200	13776	12500		8/24/2005	9:38 AM	1105	1006
9527-02-SC-02-23-0	13100	14733	11400		8/24/2005	9:41 AM	1105	1006
9527-02-SC-02-24-0	12800	14415	13600		8/24/2005	9:43 AM	1105	1006
9527-02-SC-02-25-0	12900	14521	12700		8/24/2005	9:45 AM	1105	1006
9527-02-SC-02-26-0	14100	15795	12100		8/24/2005	9:46 AM	1105	1006
9527-02-SC-02-27-0	14700	16430	12600		8/24/2005	9:48 AM	1105	1006
9527-02-SC-02-28-0	13600	15264	13300		8/24/2005	9:50 AM	1105	1006
9527-02-SC-02-29-0	13500	15158	14300		8/24/2005	9:53 AM	1105	1006
9527-02-SC-02-30-0	13800	15477	14300		8/24/2005	9:55 AM	1105	1006

9527-0002 SCAN AREA 2 SECTIONS 5 THROUGH 12

Sample Name	Background (cpm)	Action Level (cpm)	Results (cpm)	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-02-31-0	15600	17383	18900	+	8/24/2005	10:30 AM	1105	1006
9527-02-SC-02-32-0	17800	19704	15100		8/24/2005	10:32 AM	1105	1006
9527-02-SC-02-33-0	17000	18861	16400		8/24/2005	10:34 AM	1105	1006
9527-02-SC-02-34-0	19700	21703	17400		8/24/2005	10:36 AM	1105	1006
9527-02-SC-02-35-0	21200	23278	15600		8/24/2005	10:38 AM	1105	1006
9527-02-SC-02-36-0	17500	19388	16200		8/24/2005	10:40 AM	1105	1006
9527-02-SC-02-37-0	19400	21388	15100		8/24/2005	10:42 AM	1105	1006
9527-02-SC-02-38-0	20400	22438	15200		8/24/2005	10:43 AM	1105	1006
9527-02-SC-02-39-0	19900	21913	15900		8/24/2005	10:45 AM	1105	1006
9527-02-SC-02-40-0	18600	20546	13800		8/24/2005	10:47 AM	1105	1006
9527-02-SC-02-41-0	19300	21283	18300		8/24/2005	2:07 PM	1105	1006
9527-02-SC-02-42-0	19700	21703	20600		8/24/2005	2:10 PM	1105	1006
9527-02-SC-02-43-0	18100	20020	16800		8/24/2005	2:12 PM	1105	1006
9527-02-SC-02-44-0	19600	21598	20000		8/24/2005	2:14 PM	1105	1006
9527-02-SC-02-45-0	19200	21178	19500		8/24/2005	2:17 PM	1105	1006
9527-02-SC-02-46-0	19600	21598	19500		8/24/2005	2:21 PM	1105	1006
9527-02-SC-02-47-0	18000	19915	16900		8/24/2005	2:23 PM	1105	1006
9527-02-SC-02-48-0	18500	20441	20000		8/24/2005	2:26 PM	1105	1006
9527-02-SC-02-49-0	18300	20231	17600		8/24/2005	2:28 PM	1105	1006
9527-02-SC-02-50-0	17300	19177	17500		8/24/2005	2:30 PM	1105	1006
9527-02-SC-02-51-0	18100	20020	19100		8/24/2005	2:33 PM	1105	1006
9527-02-SC-02-52-0	16800	18650	18600		8/24/2005	2:35 PM	1105	1006
9527-02-SC-02-53-0	17100	18966	15700		8/24/2005	2:38 PM	1105	1006
9527-02-SC-02-54-0	16500	18333	15700		8/24/2005	2:40 PM	1105	1006
9527-02-SC-02-55-0	15500	17277	14900		8/24 / 2005	2:42 PM	1105	1006
9527-02-SC-02-56-0	16000	17805	15300		8/24/2005	2:43 PM	1105	1006
9527-02-SC-02-57-0	15500	17277	16100		8/24/2005	2:45 PM	1105	1006
9527-02-SC-02-58-0	16800	18650	16900		8/24/2005	2:47 PM	1105	1006
9527-02-SC-02-59-0	16400	18228	14800		8/24/2005	2:48 PM	1105	1006
9527-02-SC-02-60-0	17000	18861	16500		8/24/2005	2:50 PM	1105	1006

9527-0002 SCAN AREA 2 SECTIONS 5 THROUGH 12

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Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-02-61-0	15600	17383	14900		8/24/2005	2:06 PM	1112	1010
9527-02-SC-02-62-0	13600	15264	15600	+	8/24/2005	2:09 PM	1112	1010
9527-02-SC-02-63-0	14500	16219	13100		8/24/2005	2:15 PM	1112	1010
9527-02-SC-02-64-0	14700	16430	13700		8/24/2005	2:18 PM	1112	1010
9527-02-SC-02-65-0	15800	17594	13700		8/24/2005	2:22 PM	1112	1010
9527-02-SC-02-66-0	13200	14840	14300		8/24/2005	2:26 PM	1112	1010
9527-02-SC-02-67-0	14100	15795	14700		8/24/2005	2:31 PM	1112	1010
9527-02-SC-02-68-0	17400	19283	13800		8/24/2005	2:33 PM	1112	1010
9527-02-SC-02-69-0	13900	15583	14700		8/24/2005	2:37 PM	1112	1010
9527-02-SC-02-70-0	14900	16642	13000		8/24/2005	2:39 PM	1112	1010
9527-02-SC-02-71-0	16200	18016	15700		8/24/2005	2:51 PM	1112	1010
9527-02-SC-02-72-0	14400	16113	14100		8/24/2005	2:53 PM	1112	1010
9527-02-SC-02-73-0	14500	16219	13100		8/24/2005	2:56 PM	1112	1010
9527-02-SC-02-74-0	16200	18016	15800		8/24/2005	2:58 PM	1112	1010
9527-02-SC-02-75-0	15600	17383	15200		8/24/2005	3:00 PM	1112	1010
9527-02-SC-02-76-0	15000	16748	14400		8/24/2005	3:08 PM	1112	1010
9527-02-SC-02-77-0	15700	17488	14100		8/24/2005	3:12 PM	1112	1010
9527-02-SC-02-78-0	15400	17171	16400		8/24/2005	3:14 PM	1112	1010
9527-02-SC-02-79-0	15100	16854	14900		8/24/2005	3:17 PM	1112	1010
9527-02-SC-02-80-0	15300	17065	15500		8/24/2005	3:19 PM	1112	1010

9527-0002 SCAN AREA 3 SECTIONS 13 THROUGH 20

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Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-03-01-0	17300	19177	16700		8/25/2005	8:36 AM	1105	1006
9527-02-SC-03-02-0	17500	19388	15500		8/25/2005	8:40 AM	1105	1006
9527-02-SC-03-03-0	16300	18122	17100		8/25/2005	8:45 AM	1105	1006
9527-02-SC-03-04-0	18600	20546	16700		8/25/2005	8:47 AM	1105	1006
9527-02-SC-03-05-0	17100	18966	16300		8/25/2005	8:50 AM	1105	1006
9527-02-SC-03-06-0	16900	18755	16000		8/25/2005	8:53 AM	1105	1006
9527-02-SC-03-07-0	16700	18544	15000		8/25/2005	8:57 AM	1105	1006
9527-02-SC-03-08-0	16000	17805	15500		8/25/2005	8:59 AM	1105	1006
9527-02-SC-03-09-0	17700	19599	15900		8/25/2005	9:03 AM	1105	1006
9527-02-SC-03-10-0	15800	17594	16100		8/25/2005	9:05 AM	1105	1006
9527-02-SC-03-11-0	13900	15583	14100		8/25/2005	9:11 AM	1105	1006
9527-02-SC-03-12-0	15500	17277	15700		8/25/2005	9:13 AM	1105	1006
9527-02-SC-03-13-0	13100	14733	13100		8/25/2005	9:17 AM	1105	1006
9527-02-SC-03-14-0	14200	15901	15000		8/25/2005	9:31 AM	1105	1006
9527-02-SC-03-15-0	13000	14627	13600		8/25/2005	9:34 AM	1105	1006
9527-02-SC-03-16-0	15400	17171	14000		8/25/2005	9:37 AM	1105	1006
9527-02-SC-03-17-0	15600	17383	13900		8/25/2005	9:39 AM	1105	1006
9527-02-SC-03-18-0	13800	15477	14700		8/25/2005	9:42 AM	1105	1006
9527-02-SC-03-19-0	15000	16748	13600		8/25/2005	9:43 AM	1105	1006
9527-02-SC-03-20-0	12900	14521	13900		8/25/2005	9:45 AM	1105	1006
9527-02-SC-03-21-0	17000	18861	13200		8/25/2005	10:12 AM	1105	1006
9527-02-SC-03-22-0	18300	20231	13800		8/25/2005	10:14 AM	1105	1006
9527-02-SC-03-23-0	15900	17700	14300		8/25/2005	10:16 AM	1105	1006
9527-02-SC-03-24-0	15600	17383	15100		8/25/2005	10:18 AM	1105	1006
9527-02-SC-03-25-0	16600	18439	15400		8/25/2005	10:19 AM	1105	1006
9527-02-SC-03-26-0	16100	17911	15000		8/25/2005	10:21 AM	1105	1006
9527-02-SC-03-27-0	14500	16219	13700		8/25/2005	10:22 AM	1105	1006
9527-02-SC-03-28-0	16000	17805	15800		8/25/2005	10:23 AM	1105	1006
9527-02-SC-03-29-0	14200	15901	14300		8/25/2005	10:25 AM	1105	1006
9527-02-SC-03-30-0	14800	16536	14400		8/25/2005	10:26 AM	1105	1006

AL - Action Level

9527-0002 SCAN AREA 3 SECTIONS 13 THROUGH 20

Sample Name	Background (cpm)	Action Level (<u>cpm)</u>	Results (cpm)	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-03-31-0	13600	15264	12500		8/25/2005	10:31 AM	1105	1006
9527-02-SC-03-32-0	12000	13563	12300		8/25/2005	10:32 AM	1105	1006
9527-02-SC-03-33-0	13300	14946	12500		8/25/2005	10:33 AM	1105	1006
9527-02-SC-03-34-0	12200	13776	12500		8/25/2005	10:34 AM	1105	1006
9527-02-SC-03-35-0	10500	11962	11200		8/25/2005	10:37 AM	1105	1006
9527-02-SC-03-36-0	12500	14096	12700		8/25/2005	10:38 AM	1105	1006
9527-02-SC-03-37-0	12000	13563	13500		8/25/2005	10:39 AM	1105	1006
9527-02-SC-03-38-0	10900	12390	12000		8/25/2005	10:40 AM	1105	1006
9527-02-SC-03-39-0	12900	14521	10900		8/25/2005	10:41 AM	1105	1006
9527-02-SC-03-40-0	12400	13989	11300		8/25/2005	10:43 AM	1105	1006
9527-02-SC-03-41-0	14300	16007	10500		8/25/2005	8:47 AM	1112	1010
9527-02-SC-03-42-0	13300	14946	12000		8/25/2005	8:49 AM	1112	1010
9527-02-SC-03-43-0	12300	13883	12300		8/25/2005	8:52 AM	1112	1010
9527-02-SC-03-44-0	12600	14202	12000		8/25/2005	8:55 AM	1112	1010
9527-02-SC-03-45-0	11900	13457	9980		8/25/2005	8:59 AM	1112	1010
9527-02-SC-03-46-0	11200	12710	9280		8/25/2005	9:01 AM	1112	1010
9527-02-SC-03-47-0	10100	11534	8800		8/25/2005	9:03 AM	1112	1010
9527-02-SC-03-48-0	10500	11962	8260		8/25/2005	9:05 AM	1112	1010
9527-02-SC-03-49-0	10000	11427	8250		8/25/2005	9:08 AM	1112	1010
9527-02-SC-03-50-0	10000	11427	10400		8/25/2005	9:10 AM	1112	1010
9527-02-SC-03-51-0	13100	14733	11600		8/25/2005	9:18 AM	1112	1010
9527-02-SC-03-52-0	12600	14202	12100		8/25/2005	9:21 AM	1112	1010
9527-02-SC-03-53-0	12000	13563	10100		8/25/2005	9:23 AM	1112	1010
9527-02-SC-03-54-0	11300	12817	11400		8/25/2005	9:26 AM	1112	1010
9527-02-SC-03-55-0	11500	13030	10900		8/25/2005	9:28 AM	1112	1010
9527-02-SC-03-56-0	10200	11641	10300		8/25/2005	9:30 AM	1112	1010
9527-02-SC-03-57-0	12000	13563	10900		8/25/2005	9:33 AM	1112	1010
9527-02-SC-03-58-0	11300	12817	12200		8/25/2005	9:35 AM	1112	1010
9527-02-SC-03-59-0	11300	12817	11200		8/25/2005	9:37 AM	1112	1010
9527-02-SC-03-60-0	10100	11534	11300		8/25/2005	9:39 AM	1112	1010

AL - Action Level

9527-0002 SCAN AREA 3 SECTIONS 13 THROUGH 20

Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-03-61-0	13000	14627	11200		8/25/2005	10:10 AM	1112	1010
9527-02-SC-03-62-0	10800	12283	10400		8/25/2005	10:12 AM	1112	1010
9527-02-SC-03-63-0	11300	12817	10500		8/25/2005	10:15 AM	1112	1010
9527-02-SC-03-64-0	10300	11748	10300		8/25/2005	10:16 AM	1112	1010
9527-02-SC-03-65-0	10100	11534	11100		8/25/2005	10:19 AM	1112	1010
9527-02-SC-03-66-0	12500	14096	11400		8/25/2005	10:21 AM	1112	1010
9527-02-SC-03-67-0	10000	11427	11100		8/25/2005	10:23 AM	1112	1010
9527-02-SC-03-68-0	10700	12176	11300		8/25/2005	10:24 AM	1112	1010
9527-02-SC-03-69-0	11100	12604	10400		8/25/2005	10:26 AM	1112	1010
9527-02-SC-03-70-0	10100	11534	11100		8/25/2005	10:28 AM	1112	1010
9527-02-SC-03-71-0	10100	11534	9710		8/25/2005	10:30 AM	1112	1010
9527-02-SC-03-72-0	10300	11748	10300		8/25/2005	10:32 AM	1112	1010
9527-02-SC-03-73-0	10200	11641	9850		8/25/2005	10:34 AM	1112	1010
9527-02-SC-03-74-0	10600	12069	10800		8/25/2005	10:36 AM	1112	1010
9527-02-SC-03-75-0	9440	10827	10400		8/25/2005	10:38 AM	1112	1010
9527-02-SC-03-76-0	10800	12283	8810		8/25/2005	10:41 AM	1112	1010
9527-02-SC-03-77-0	10200	11641	9830		8/25/2005	10:43 AM	1112	1010
9527-02-SC-03-78-0	10800	12283	10500		8/25/2005	10:45 AM	1112	1010
9527-02-SC-03-79-0	11100	12604	10900		8/25/2005	10:46 AM	1112	1010
9527-02-SC-03-80-0	10300	11748	10100		8/25/2005	10:47 AM	1112	1010

9527-0002 SCAN AREA 4 SECTIONS 21 THROUGH 30

<u>Sample Name</u>	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9527-02-SC-04-01-0	10800	12283	8220		8/25/2005	1:36 PM	1105	1006
9527-02-SC-04-02-0	12200	13776	9040		8/25/2005	1:51 PM	1105	1006
9527-02-SC-04-03-0	11600	13137	8810		8/25/2005	1:58 PM	1105	1006
9527-02-SC-04-04-0	11000	12497	8090		8/25/2005	2:00 PM	1105	1006
9527-02-SC-04-05-0	10900	12390	9650		8/25/2005	2:02 PM	1105	1006
9527-02-SC-04-06-0	10900	12390	10200		8/25/2005	2:05 PM	1105	1006
9527-02-SC-04-07-0	9040	10397	8940		8/25/2005	2:07 PM	1105	1006
9527-02-SC-04-08-0	9050	10408	9660		8/25/2005	2:12 PM	1105	1006
9527-02-SC-04-09-0	10000	11427	9630		8/25/2005	2:16 PM	1105	1006
9527-02-SC-04-10-0	9950	11374	11200		8/25/2005	2:18 PM	1105	1006
9527-02-SC-04-11-0	10500	11962	8120		8/25/2005	2:22 PM	1105	1006
9527-02-SC-04-12-0	8690	10020	9250		8/25/2005	2:24 PM	1105	1006
9527-02-SC-04-13-0	9060	10418	8060		8/25/2005	2:28 PM	1105	1006
9527-02-SC-04-14-0	9240	10612	7700		8/25/2005	2:29 PM	1105	1006
9527-02-SC-04-15-0	10200	11641	9650		8/25/2005	2:30 PM	1105	1006
9527-02-SC-04-16-0	8340	9643	7760		8/25/2005	2:32 PM	1105	1006
9527-02-SC-04-17-0	8360	9 665	7550		8/25/2005	2:35 PM	1105	1006
9527-02-SC-04-18-0	8750	10085	8670		8/25/2005	2:36 PM	1105	1006
9527-02-SC-04-19-0	7780	9039	7490		8/25/2005	2:38 PM	1105	1006
9527-02-SC-04-20-0	8880	10225	7460		8/25/2005	2:39 PM	1105	1006
9527-02-SC-04-21-0	8530	9848	9030		8/25/2005	2:57 PM	1105	1006
9527-02-SC-04-22-0	9510	10902	7420		8/25/2005	2:58 PM	1105	1006
9527-02-SC-04-23-0	10300	11748	8570		8/25/2005	3:00 PM	1105	1006
9527-02-SC-04-24-0	10800	12283	7770		8/25/2005	3:01 PM	1105	1006
9527-02-SC-04-25-0	9510	10902	8350		8/25/2005	3:02 PM	1105	1006
9527-02-SC-04-26-0	8570	9 891	9390		8/25/2005	3:03 PM	1105	1006
9527-02-SC-04-27-0	10400	11855	8790		8/25/2005	3:05 PM	1105	1006
9527-02-SC-04-28-0	9980	11406	9820		8/25/2005	3:06 PM	1105	1006
9527-02-SC-04-29-0	11000	12497	8860		8/25/2005	3:07 PM	1105	1006
9527-02-SC-04-30-0	9920	11341	8840		8/25/2005	3:08 PM	1105	1006

9527-0002 SCAN AREA 4 SECTIONS 21 THROUGH 30

Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	Probe S/N
9527-02-SC-04-31-0	9250	10623	9220		8/25/2005	3:12 PM	1105	1006
9527-02-SC-04-32-0	9480	10870	9440		8/25/2005	3:13 PM	1105	1006
9527-02-SC-04-33-0	7920	9190	8580		8/25/2005	1:36 PM	1112	1010
9527-02-SC-04-34-0	10200	11641	8160		8/25/2005	1:37 PM	1112	1010
9527-02-SC-04-35-0	9080	10440	8350		8/25/2005	1:40 PM	1112	1010
9527-02-SC-04-36-0	9020	10375	8540		8/25/2005	1:42 PM	1112	1010
9527-02-SC-04-37-0	8 460	9773	9110		8/25/2005	1:45 PM	1112	1010
9527-02-SC-04-38-0	9410	10794	6990		8/25/2005	1:47 PM	1112	1010
9527-02-SC-04-39-0	8690	10020	8960		8/25/2005	1:52 PM	1112	1010
9527-02-SC-04-40-0	9630	11030	6590		8/25/2005	1:56 PM	1112	1010
9527-02-SC-04-41-0	12100	13670	9990		8/25/2005	2:00 PM	1112	1010
9527-02-SC-04-42-0	11100	12604	10700		8/25/2005	2:03 PM	1112	1010
9527-02-SC-04-43-0	12700	14308	8350		8/25/2005	2:06 PM	1112	1010
9527-02-SC-04-44-0	13300	14946	7590		8/25/2005	2:09 PM	1112	1010
9527-02-SC-04-45-0	10100	11534	8370		8/25/2005	2:12 PM	1112	1010
9527-02-SC-04-46-0	10900	12390	10200		8/25/2005	2:14 PM	1112	1010
9527-02-SC-04-47-0	10100	11534	10700		8/25/2005	2:15 PM	1112	1010
9527-02-SC-04-48-0	9470	10859	7850		8/25/2005	2:17 PM	1112	1010
9527-02-SC-04-49-0	7750	9006	8020		8/25/2005	2:25 PM	1112	1010
9527-02-SC-04-50-0	7850	9114	6840		8/25/2005	2:29 PM	1112	1010
9527-02-SC-04-51-0	7560	8801	6980		8/25/2005	2:32 PM	1112	1010
9527-02-SC-04-52-0	8170	9460	6990		8/25/2005	2:35 PM	1112	1010
9527-02-SC-04-53-0	7950	9222	6910		8/25/2005	2:58 PM	1112	1010
9527-02-SC-04-54-0	9660	11063	4830		8/25/2005	3:00 PM	1112	1010
9527-02-SC-04-55-0	10700	12176	4730		8/25/2005	3:03 PM	1112	1010
9527-02-SC-04-56-0	9810	11224	6600		8/25/2005	3:07 PM	1112	1010
9527-02-SC-04-57-0	8880	10225	6830		8/25/2005	3:10 PM	1112	1010
9527-02-SC-04-58-0	7790	9050	7810		8/25/2005	3:11 PM	1112	1010
9527-02-SC-04-59-0	7600	8844	6070		8/25/2005	3:13 PM	1112	1010
9527-02-SC-04-60-0	7320	8541	6720		8/25/2005	3:14 PM	1112	1010

9527-0002 SCAN AREA 4 SECTIONS 21 THROUGH 30

Sample Name	Background (cpm)	Action Level (cpm)	Results <u>(cpm)</u>	Above <u>AL</u>	Log Date	<u>Log Time</u>	<u>E600 S/N</u>	<u>Probe S/N</u>
9527-02-SC-04-61-0	13300	1 49 46	11700		8/29/2005	1:58 PM	1105	1006
9527-02-SC-04-62-0	11900	13457	12500		8/29/2005	2:01 PM	1105	1006
9527-02-SC-04-63-0	12600	14202	12300		8/29/2005	2:05 PM	1105	1006
9527-02-SC-04-64-0	12900	14521	12400		8/29/2005	2:09 PM	1105	1006
9527-02-SC-04-65-0	13100	14733	14500		8/29/2005	2:13 PM	1105	1006
9527-02-SC-04-66-0	14300	16007	15000		8/29/2005	2:17 PM	1105	1006
9527-02-SC-04-67-0	21700	23802	16500		8/29/2005	2:21 PM	1105	1006
9527-02-SC-04-68-0	21100	23173	17100		8/29/2005	2:23 PM	1105	1006
9527-02-SC-04-69-0	19500	21493	17100		8/29/2005	2:25 PM	1105	1006
9527-02-SC-04-70-0	21300	23383	18900		8/29/2005	2:28 PM	1105	1006
9527-02-SC-04-71-0	15000	16748	16000		8/29/2005	2:33 PM	1105	1006

EAST MOUNTAIN SIDE SURVEY UNIT 9527-0002

RELEASE RECORD

Attachment 2c Split Sample Assessment Forms (2 Pages) Health Physics Procedure

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24265-000-GPP-GGGR-R5124-000-Rev.CY-000 Attachment A

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Split Sample Assessment Form

Survey Area#	: 9527	Survey Ur	uit #: 0002	Survey Unit name: East Mountain Side							
Sample Plan o	2005-0054	1	SML#: 9527-0002-001								
Sample Descr gamma spectro sample was 952	iption: Con ascopy by 27-0002-00	nparison of off-site Ven 1FS.	split samples dor Laborato	collected from ry. The stan	sample m dard samp	easurement lo ple was 9527	cation #1 and a -0002-001F, the	nalyzed using e comparison			
STANDARD						COMPARISON					
Radionuclide	Activity Value	Standard Error	Resolution	Agreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptable (Y/N)			
Cs-137	1.38	7.75E-2		0.75 - 1.33	2.18	1.08E-1	1.6	N			
Ra-226	6.44E-1	5.90E-2	11	0.6 - 1.66	8.60E-1	9.20E-2	1.3	Y			
Pb-214	7.42E-1	5.90E-2	13	0.6 - 1.66	1.10	1.10E-1	1.5	Y			
Comments/Co Condition Rep	orrective A ort (CR) 05	-0781. Eval	umented disaguation of the	data using	used to	provided to a	mow acceptant amples.	ce criteria			
the reported results for NORM resulted in acceptable agreement. The source of the disagreement for Cs-137 is likely a disproportionate amount of organic material in the field splits.						Resolution Agreement Range 4 - 7 0.5 - 2.0 8 - 15 0.6 - 1.66 16 - 50 0.75 - 1.33 51 - 200 0.80 - 1.25 >200 0.85 - 1.18					
Performed By Tack me	aury	5	Date 3/16/06	Review	ed By:	Rayhert	Date: 37	16-06			

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Split Sample Assessment Form

Sample Descr	iption: Co	mparison of	split samples	sample measurement location #11 and analyzed usin				
gamma spectros was 9527-0002	scopy by of -011FS.	ff-site Vendo	or Laboratory.	The standard	sample wa	s 9527-0002-	011F, the comp	arison sampl
· · ·	S	TANDAR	D	COMPARISON				
Radionuclide	Activity Value	Standard Error	Resolution	Ágreement Range	Activity Value	Standard Error	Comparison Ratio	Acceptabl (Y/N)
Cs-137	7.17E-1	2.48E-2	29	0.75 - 1.33	5.81E-1	3.96E-1	0.8	Y
				. <u></u>	· · · · · · · · · · · · · · · · · · ·		······	<u> </u>
				,				
Comments/Co	orrective A	ctions: N//	A		Table is pused to a	provided to	show acceptan	ce criteria
						Resolution	Agreement R	ange
						4-7 8-15	0.5 - 2.0 0.6 - 1.66 0.75 - 1.72	
						51 - 200 >200	0.80 - 1.25	
	·							
Performed By:			Date Review		ed By:		M Date:	
RELEASE RECORD

Attachment 2d Preliminary Data Forms (2 Pages)

PRELIMINARY DATA REVIEW FORM

N	WP&IR No. : Survey Unit : Survey Unit Name : Classification : Survey Media : Type of Survey : Type of Measurement :	2005-0054 9527-0002 East Mountai 2 Soil Final Status S Radionuclide	n Side Survey Specific					
-	milder of ivitasurements :						-	
	BASIC STATIS	FICAL QUAN	ITTIES	0 00 [.]	TT 9	0.14	m - 00	
(11)	Tarnat Laval (nCi/a)	J 5372-00	1 225-00	51-90 4 0672 01	1 200 1 00	1 917-100	10-99	
Ģ	Minimum Volue	1 102-01	1.225700	4.905-01	1.325702	1.815TUU	4.035T00 2.3517.01	
Z	Maximum Value	7 /12-00	-1.93E-02	9.305-03	-4./35TVV	2.306-01	3.236-01	
	Mean ·	2.415+00 8.85F-01	1 385-02	7.4012-02 7.57E-07	0.375700 7 5072100	2.900-01	3.70E-VI	
	Median ·	7 17B-01	1.502-02	1 238-02	2.305-00	2.712-01	3.500-01	
	Standard Deviation :	5.56E-01	1.85E-02	2.57E-02	2.308+00 2.89E+00	3.58E-02	2.74E-02	
-		· · ·	Reno	ted Results				
	ľ	Cs-137	Co-60	Sr-90	H-3	C-14	Ta_00	
		Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Fraction of
	Sample Identification	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)	Target Level
	9527-0002-001F	1.38E+00	2.06E-02	9.46E-02	3.94B+00		QQ/	0.783
	9527-0002-002F	8.73E-01	7.08E-03	1.23E-02	1.58E+00			0.388
	9527-0002-003F	9.60E-01	0.00E+00	3.58E-03	2.30E+00			0.404
	9527-0002-004F	2.41E+00	3.94E-02	3.64E-02	1.72E+00	2.96E-01	3.68E-01	1.326
	9527-0002-005F	5.88E-01	-1.93E-02	8.69E-03	1.84E+00			0.248
	9527-0002-006F	7.61E-01	1.07E-02	2.77E-02	-1.01E+00			0.358
	9527-0002-007F	1.38E+00	0.00E+00	1.82E-02	2.24E+00			0.599
		:						

7/16/06 alse tu

Reviewed Dal Raylall 3-16-06 1 of 2

Submitted by/Date

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PRELIMINARY DATA REVIEW FORM

		Repor	ted Results				
	Cs-137	Со-б0	Sr-90	H-3	C-14	Tc-99	
	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Fraction of
Sample Identification	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)	Target Level
9527-0002-008F	5.16E-01	-5.22E-03	1.22E-02	4.87E+00			0.261
9527-0002-009F	4.77E-01	-7.01E-03	1.67E-02	1.94E+00	2.87E-01	3.25E-01	0.470
9527-0002-010F	1.33E+00	1.50E-02	5.78E-02	8.57E+00			0.719
9527-0002-011F	7.17E-01	2.99E-02	9.17E-03	3.85E+00			0.356
9527-0002-012F	6.46E-01	1.85E-02	1.07E-02	3.48E+00	2.30E-01	3.76E-01	0.539
9527-0002-013F	5.52E-01	4.96E-02	5.54E-02	-4.73E+00			0.335
9527-0002-014F	5.68E-01	2.62E-02	1.05E-02	2.74E+00			0.288
9527-0002-015F	1.10E-01	2.21E-02	3.72E-03	4.13E+00			0.100

Reported results for the listed radionuclides did not always meet the accepted level of detection (i.e., a result greater than two standard deviations uncertainty)

3/16/06 Tack malalle Submitted by/Date

Reviewed Derl Revelat 3-16-06

2 of 2

RELEASE RECORD

Attachment 2e Graphical Representation of Data (2 Pages) Health Physics Procedure

GGGR-R5123-000-Rev.CY-001 Attachment C

FREQUENCY PLOT FOR CESIUM-137





7%

20%

0%

7%

100%

1~	
Jace Auchiten	3/16/06
Submitted Bu/Date	

Derl Rondold 3-16-96 Reviewed By/Date

1.315

1.717

2.118

2.520

Total:

3

0

1

15

Health Physics Procedure

GGGR-R5123-000-Rev.CY-001 Attachment C

QUANTILE PLOT FOR CESIUM-137

Survey Unit: 9527-0002 Survey Unit Name: East Mountain Side Mean: 8.85E-01 pCi/g



2.41E+00 15 3/14/06 3-16-06 Subr

1.38E+00

1.38E+00

Reviewed By/Date

13

14

83%

90%

97%

RELEASE RECORD

Attachment 2f Sign Test Calculation (1 Page) Connecticut Yankee Decommissioning Project Health Physics Procedure

GPP-GGGR-R5121-001 Attachment B, Rev. CY-001 MAJOR

Survey	Area Number	: 9527	:	Survey Unit Numb	er: 0002	W	PIR#: 2005-00	54	
Survey	Area Name: E	last Mountain side		Classificatio	on: 2	TYPE I (a enor):	0.05	N: 15	
	Radionu	clides:	Cs-137	Co-60	Sr-90	H-3	C-14	7	[c-99
	DCC	il:	2.53E+00	1.22E+00	4.96E-01	1.32E+02	1.81E+0	0 4.0	3E+00 .
Res Radi (p	ults 1 st onuclide Ci/g)	Results 2 nd Radionuclide (pCi/g)	Results 3 rd Radionuclide (pCi/g)	Results 4 th Radionuclide (pCi/g)	Results 5 th Radionuclide (pCi/g)	Results 6 th Radionuclide (pCi/)	Weighted Sum (W _s)	1 - Ws	Sign
1.3	8E+00	2.06E-02	9.46E-02	3.94E+00	:		0.783	0.217	+
8.	73E-01	7.08E-03	1.23E-02	1.58E+00			0.388	0.612	+
9.	50E-01	0.00E+00	3.58E-03	2.30E+00			0.404	0.596	+
2.4	1E+00	3.94E-02	3.64E-02	1.72E+00	2.96E-01	3.68E-01	1.326	-0.326	-
5.	88E-01	-1.93E-02	8.69E-03	1.84E+00			0.248	0.752	+
7.(51E-01	1.07E-02	2.77E-02	-1.01E+00			0.358	0.642	+
1.3	8E+00	0.00E+00	1.82E-02	2.24E+00			0.599	0.401	+
5.	16E-01	-5.22E-03	1.22E-02	4.87E+00			0.261	0.739	+
4.	77E-01	-7.01E-03	1.67E-02	1.94E+00	2.87E-01	3.25E-01	0.470	0.530	. +
1.3	3E+00	1.50E-02	5.78E-02	8.57E+00			0.719	0.281	.+
7.	17E-01	2.99E-02	9.17E-03	3.85E+00	۰.		0.356	0.644	+
6.	46E-01	1.85E-02	1.07E-02	3.48E+00	2.30E-01	3.76E-01	0.539	0.461	+
5.	52E-01	4.96E-02	5.54E-02	-4,73E+00	: .		0.335	0.665	+
5.	58E-01	2.62E-02	1.05E-02	2.74E+00			0.288	0.712	+
1.	IOE-01	2.21E-02	3.72E-03	4.13E+00			0.100	0.900	+
					:	Number o	f positive diffe	rences (S+):	14

Sign Test Calculation Sheet For Multiple Radionuclides

Critical Value: 11 Survey Unit Meets Acceptance Criterion Performed by: JACK MICHAEL Date: 3/11/06 1- Revelal Date: Ыċ 3-16-06 Independent Review by:

Page 1 of 1

RELEASE RECORD

Attachment 2g COMPASS DQA Surface Soil Report with Retrospective Power Curve (4 Pages)



DQA Surface Soil Report

Assessment Summary

Site:	9527-0002		A a m land	
Planner(s):	McCarthy	60	Keview	a Dul Kunthal 3-16-06
Survey Unit Name:	East Mountair	n Side		
Report Number:	1			
Survey Unit Samples:	15			
Reference Area Samples:	0			
Test Performed:	Sign	* .	Test Result:	Pass
Judgmental Samples:	0		EMC Result:	Not Performed
Assessment Conclusion:	Reject Null H	lypothesis (Sı	irvey Unit PASS	ES)

Retrospective Power Curve





DQA Surface Soil Report

Survey Unit Data

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NOTE: Type = "S" indicates survey unit sample. Type = "R" indicates reference area sample.

Sample Number	Туре	C-14 (pCl/g)	Co-60 (pCl/g)	Cs-137 (pCl/g)	
9527-0002-001F	8	0	0.02	1.38	-
9527-0002-002F	8	0	0.01	0.87	
9527-0002-003F	S	0	0	0.96	
9527-0002-004F	S	0.3	0.04	2.41	
9527-0002-005F	S	0	-0.02	0.59	
9527-0002-006F	S	0	0.01	0.76	
9527-0002-007F	S	0	0	1.38	
9527-0002-008F	S	0	-0.01	0.52	
9527-0002-009F	S	0.29	-0.01	0.48	
9527-0002-010F	S	0	0,02	1.33	
9527-0002-011F	S	0	0.03	0.72	
9527-0002-012F	S	0.23	0.02	0.65	
9527-0002-013F	S	0	0.05	0.55	
9527-0002-014F	S	0	0.03	0.57	
9527-0002-015F	S	0	0.02	0.11	
Sample Number	Туре	H-3 (pCl/g)	SrY-90 (pCl/g)	Tc-89 (pCl/g)	-
9527-0002-001F	S	3.94	0.09	0	_
9527-0002-002F	S	1.58	0.01	0	
9527-0002-003F	S	2.3	0	0	
9527-0002-004F	8	1.72	0.04	0.37	
9527-0002-005F	S	1.84	0.01	0	
9527-0002-006F	\$	-1.01	0.03	0	
9527-0002-007F	S	2.24	0.02	0	
9527-0002-008F	8	4.67	0.01	0	
9527-0002-009F	S	1.94	0.02	0.32	
9527-0002-010F	8	8.57	0.06	0	
9527-0002-011F	S	3.85	0.01	Ö	
9527-0002-012F	8	3.48	0.01	0.38	
9527-0002-013F	S	-4.73	0.06	0	
9527-0002-014F	S	2.74	0.01	0	
9527-0002-015F	S	4.13	0	C	



Modified Data (Unity Rule SOR)

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NOTE: Type = "S" indicates survey unit sample. Type = "R" indicates reference area sample.

	Sample Number	Туре	Sum-of-Ratios (SOR)	
	9527-0002-001F	S	0.78	
	9527-0002-002F	S	0.39	
	9527-0002-003F	S	0.4	
	9527-0002-004F	S	1.33	
•	9527-0002-005F	S	0.25	
	9527-0002-006F	S	0.36	
	9527-0002-007F	S	0.6	
	9527-0002-008F	S	0.26	
	9527-0002-009F	S	0.47	
	9527-0002-010F	S	0.72	· · · · · · · · · · · · · · · ·
	9527-0002-011F	S	0.36	
	9527-0002-012F	S	0.54	
	9527-0002-013F	S	0.33	
	9527-0002-014F	S	0.29	
	9527-0002-015F	S	0.1	

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Basic Statistical Quantities Summary

Statistic	Survey Unit	Background	DQO Results
Sample Number	15	N/A	N=15
Mean (SOR)	0.48		0.53
Median (SOR)	0.39	NA	N/A
Std Dev (SOR)	0.30	N/A	0.11
High Value (SOR)	1.33	N/A	N/A
Low Value (SOR)	0.10	N/A	N/A

Statistical Test Summary

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_				
S+:		14		
Critical Va	lue:	11		
Result		Pass		
	Data		DCGLw - Data	Sign
	0.78		0.22	+
	0.39		0.61	+
	0.4		0.60	+
	1.33	•••• •••• ••• ••• •••	-0.33	
	0.25		0.75	+
	0.3 6		0.64	+
	0.6		0.40	+
	0.26		0.74	+
	0.47		0.53	+
	0.72		0.28	+
	0.36		0.64	+
	0.54		0.46	+
	0.33		0.67	+
	0.29		0.71	+
	0.1		0.90	+